

*June 1947*

# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



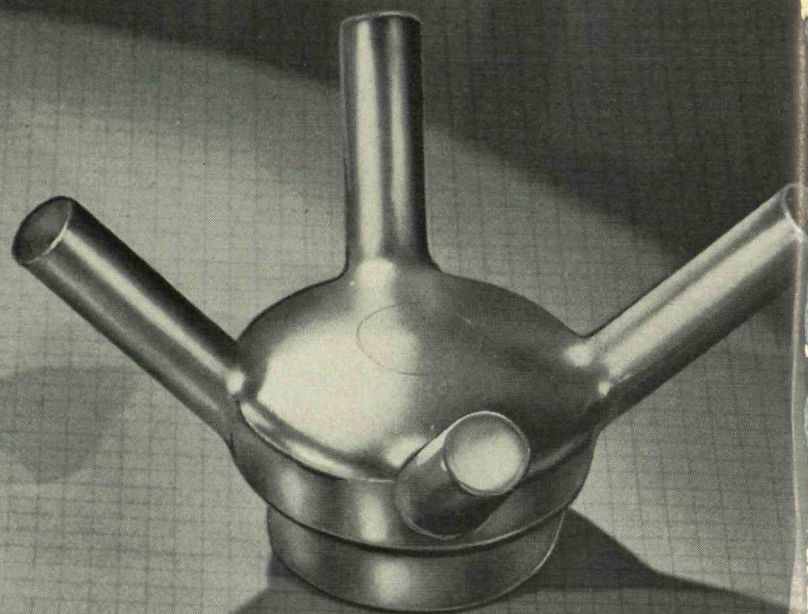
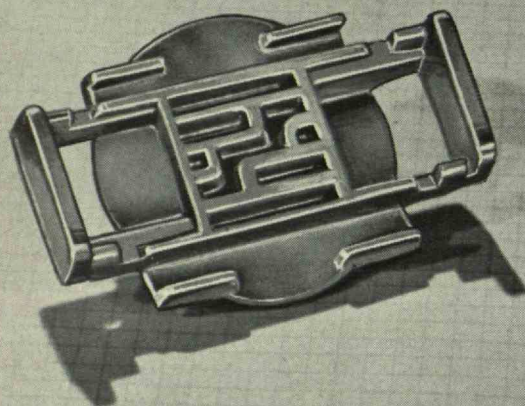
# technology review

Published by MIT

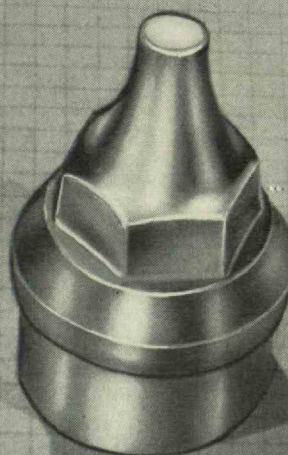
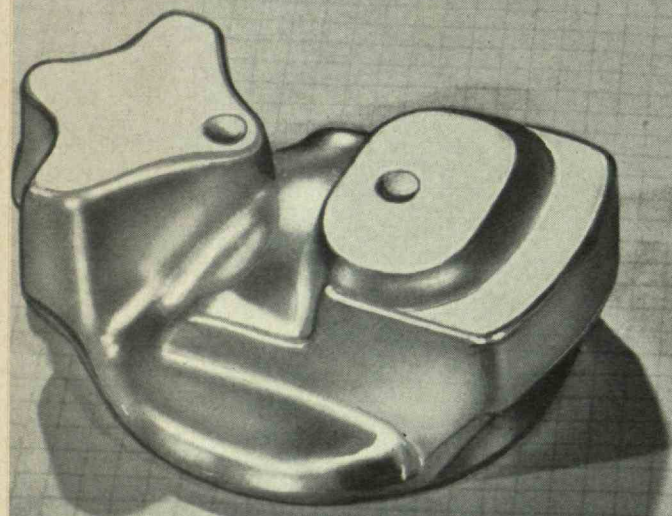
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IMPROVE QUALITY.. LOWER COSTS.. *USE FORGINGS!*



UNLIMITED APPLICATIONS



THE **HARVEY**

**METAL CORPORATION**

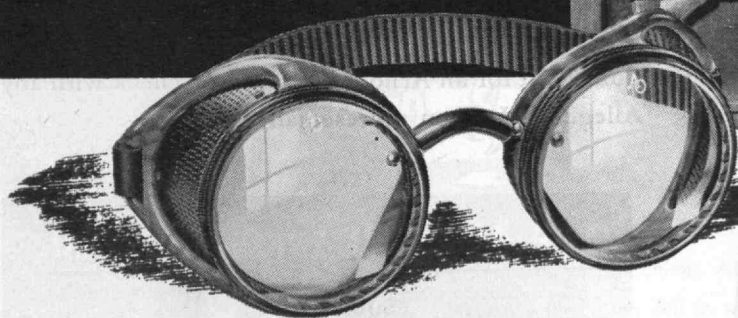
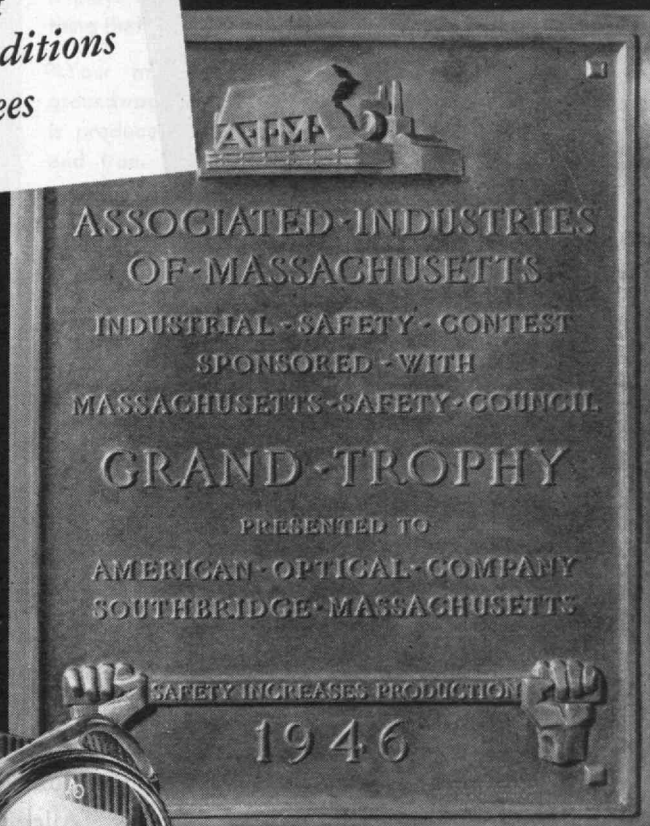
HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS



*We Prize This Plaque  
Gained Through Hard Work  
As a Testament  
to Safe Working Conditions  
for Our Employees*



... at 

**we try to practice what we preach!**

American Optical Company, in competition with 325 companies has won the state-wide accident prevention contest for 1946 and has received the Grand Trophy presented annually to that Massachusetts concern judged to be the safest in which to work. We prize this honor highly, not for the trophy merely, but because the attainment of the safest working conditions for our employees, earned through unremitting effort, is its own reward. In this spirit, we are also pleased that the award in the Commercial Vehicle Accident Reduction Contest was won by AO for operating its trucks during 1946 without accidents.

At AO we try to practice what we preach... it *pays off* in dollars and cents! Our eye-

accident prevention and eye-protection program includes vision checks and examinations, corrective glasses if needed, safety-goggles for employees with defective vision, and occupational glasses for employees on jobs requiring special visual skills and attention.

Your nearest AO representative can supply complete details about a program which can improve worker output and morale, reduce accidents and spoilage and lower production costs. Ask him to call.

**American  Optical**  
COMPANY

*Safety  
Division*

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



# ARNOLD

Specialists and  
Leaders in the

Design,

Engineering

and

Manufacture

of

PERMANENT

MAGNETS



Arnold's business is permanent magnets, *exclusively*—a field to which we have contributed much of the pioneering and development, and in which we have set peak standards for quality and uniformity of product.

Our service to users of permanent magnets starts at the design level and carries on to finish-ground and tested units, ready for your installation. It embraces all Alnico grades and other types of permanent magnet materials—any size or shape—and any magnetic or mechanical requirement, no matter how exacting.

Let us show you the latest developments in permanent magnets, and how Arnold products can step up efficiency and reduce costs in your magnet applications. Call for an Arnold engineer, or check with any Allegheny Ludlum representative.

## THE ARNOLD ENGINEERING CO.

Subsidiary of

ALLEGHENY LUDLUM STEEL CORPORATION

147 East Ontario Street, Chicago, Illinois



Specialists and Leaders in the Design  
Engineering and Manufacture of PERMANENT MAGNETS



# Grinding is with you from morn' till night



● Grinding had a part in producing the alarm clock that wakes you in the morning — and it plays a part in producing almost everything that you use throughout the whole day.

● Your morning newspaper is made of groundwood pulp — your breakfast cereal is produced by steel rolls ground smooth and true.

● Grinding had much to do with making the 8:15 and the rails on which it runs.

● Your office machinery and equipment are products of grinding — also your recreational paraphernalia.

● Thousands of grinding operations played a vital part in producing your automobile.

● The furniture in your home was cut and shaped with ground tools and finished with abrasives.

● That final midnight snack comes from a refrigerator whose dependability is due to precision grinding.

● And even from night to morn' grinding is with you — it had a hand in producing the oil burner that keeps your home comfortable.

## And wherever grinding is done you'll find NORTON

... for Norton is the world's largest producer of abrasives, grinding wheels and grinding machines. At Norton you'll find the engineering skill to solve all your grinding problems. And it's available through Norton branches and distributors the world over.

**NORTON COMPANY, WORCESTER 6, MASS.**

*Behr-Manning, Troy, N. Y., is a Norton Division*

## NORTON ABRASIVES

ABRASIVES - GRINDING WHEELS - GRINDING AND LAPPING MACHINES - REFRACTORIES - POROUS MEDIUMS - NON-SLIP FLOORS - NORBIDE PRODUCTS - LABELING MACHINES





## FOR INDUSTRY

*Carbon Black*  
*Natural Gas*  
*Natural Gasoline*  
*Pumping Equipment*  
*Pine Tar*  
*Charcoal*

The list of finished products using Cabot raw materials is much longer than that of the materials themselves, because of their extraordinary versatility. Carbon black, for instance, has several distinctly different uses in the automotive industry. One of these is in tires, where carbon black is an indispensable reinforcing agent.

Yet another Cabot ingredient in tires is pine tar, provided by the Retort Chemical Division of Cabot Carbon Company. It is an essential in rubber as a softener. Cabot pine tar also has many other uses, notably in the cordage industry, in shipbuilding and maintenance, and in the manufacture of medicinals and pharmaceuticals.

**CABOT CARBON CO.**  
**TEXAS ELF CARBON CO.**  
**GENERAL ATLAS CARBON CO.**  
**CABOT SHOPS, INC.**



**GODFREY L. CABOT, INC.**

77 FRANKLIN STREET • BOSTON 10, MASS.

# To Technology Men

## in

### PETROLEUM MARKETING...

#### • Do you like Spilled Gasoline?

What your answer should be is obvious — because it is the Petroleum Marketer (and the car owner) who really pay the penalty for the unsatisfactory conditions now present in automotive gasoline tank design. Spilled gasoline is only a symptom — not the disease.

You — the Petroleum Marketer — and nearly a million men engaged in the final phase of marketing gasoline — are confronted more than a billion times a year with the problem of blindly filling automotive gasoline tanks. Many of these tanks will accept the gasoline at only about one half the speed of your pumps.

What is the result? Your employees take twice as long to fill tanks as they should. Your investment in filling stations is not nearly as productive as it should be. Due to spillage, cost of maintenance is increased. Customers hesitate to say, "Fill 'er up." Fire hazards to life and property are multiplied.

Why not ask your own attendants how they like to fill a Packard Clipper, Chrysler Imperial or Willys Station Wagon — all equipped with the VENTALARM whistling tank fill signal. I'll wager you will discover that these cars have the attendants' good will — and cost less money to fill.

It is my belief that the automotive manufacturers do not realize the hardships that are being visited upon you by inefficient gasoline tank design. In your own self-interest, why not inform the manufacturers how slow-filling, always-spilling gasoline tanks adversely affect your operations — and you might mention VENTALARM.

*If new cars were to be VENTALARM-equipped —*

What would be the manufacturer's cost per vehicle?

Pennies

What would the consumers save?

Millions

What would Petroleum Marketers save?

Millions

*Yours, for fast-filling, non-spilling gasoline tanks,*

*Frank P. Scully*  
M.I.T. '15



P.S. Any Tech man who would like VENTALARM for his own gasoline tank, or who desires to examine its simplicity of construction, is welcome to one with my compliments. (There is an installation expense in equipping old tanks.)

• T. M. REG. U. S. PAT. OFF.

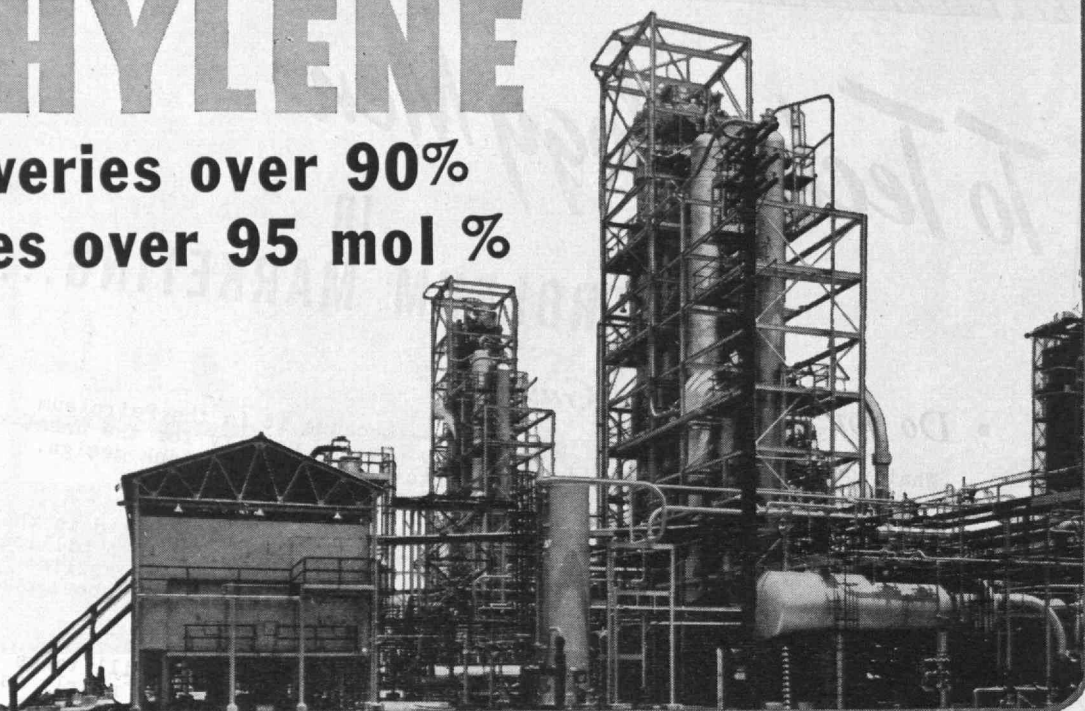
Over a million homes are now equipped with the VENTALARM fuel oil tank fill signal. The driver never enters the home.

**SCULLY SIGNAL COMPANY • 98 FIRST STREET, CAMBRIDGE 41, MASS.**



# ETHYLENE

**recoveries over 90%  
purities over 95 mol %**



*100,000 pounds of ethylene per day are produced by this plant, designed and built by The Lummus Company.*

## ...without low-temperature refrigeration

In 1943 Lummus completed construction of an ethylene plant for one of the nation's best known chemical companies. With this plant (the first to employ the absorption process for the purification of ethylene) the company has consistently obtained high ethylene recoveries (over 90%) and purities (up to 95 mol %) without use of extreme low-temperature refrigeration.

Among other basic advantages which Lummus incorporated in this plant are flexibility, economical resolution of the charge and furnace effluent gas streams, and ease of control.

Lummus is currently completing construction of two similar ethylene plants with even higher purity—99+mol % ethylene.

With complete research and construction facilities—and with broad experience in petroleum refining and chemical production—Lummus is well prepared to design and build your facilities for the production of ethylene, propylene, phenol, and other chemicals from petroleum.

**THE LUMMUS COMPANY**  
420 Lexington Avenue, New York 17, N. Y.

**chemical processes and plants**

CHICAGO—600 South Michigan Avenue, Chicago 5, Ill.  
HOUSTON—Mellie Esperson Bldg., Houston 2, Texas  
LONDON—78 Mount Street, London, W. 1, England





Howard W. Arnold

# SKILL ..at your Service

At American Bosch, the experience-born skill of thousands of pairs of hands operating modern machines is at the service of the American Diesel industry and its thousands of users.

So, too, are available the experience of engineers who have worked closely with the industry for years . . . fully equipped laboratories . . . productive capacity that has kept pace with the industry's rapid growth . . . field service which keeps the equipment operating as the makers intended . . .

. . . which may serve to explain why a large majority of America's Diesel Builders equip their engines with American Bosch Diesel Fuel Injection Equipment. AMERICAN BOSCH CORPORATION, Springfield 7, Mass.

## AMERICAN BOSCH

*Diesel Fuel Injection*



AUTOMOTIVE AND AVIATION ELECTRICAL PRODUCTS



## NEW DESIGN No. 2

### SURFACE GRINDING MACHINE

**Alternative drives . . .** motor in base or motorized spindle.

**Two rates of table feed . . .** 19 or 31 ft. per minute.

**Choice of plain bearing or antifriction bearing spindle unit . . .** interchangeable cartridge type.

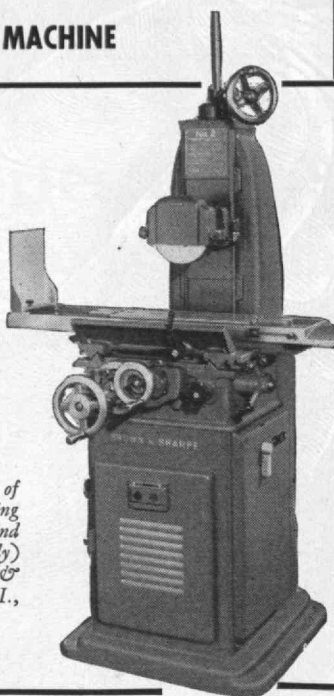
**Improved column construction . . .** for increased rigidity.

**Improved guarding . . .** for cleanliness and safety.

**Convenient controls . . .** for fast, accurate manipulation.

**Enclosed electrical controls . . .** in separate housing.

● Ask for specifications and details of numerous attachments for broadening the range of usefulness of the No. 2 and the No. 2B (with hand feeds only) Surface Grinding Machines. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.



## BROWN & SHARPE

## HEVI-DUTY

### Hevi Duty Electric Co. Surges Transformers

With the acquisition of the Surges Electric Company of Milwaukee, Hevi Duty can now offer quality dry type air cooled transformers with or without tap changing switches as well as special transformers for special requirements. An accelerated program of modernization will present opportunities for increased production and good delivery schedules.

Write for Bulletin S-4611

HAROLD E. KOCH '22, President

ELTON E. STAPLES '26, District Manager, Cleveland

**HEVI DUTY ELECTRIC COMPANY**

HEAT TREATING FURNACES **HEVI-DUTY** ELECTRIC EXCLUSIVELY  
MILWAUKEE 1, WISCONSIN

## THE TABULAR VIEW

**Salubrity.** — The rigors of pursuing strenuous courses of high academic standing at the Institute presuppose sound health on the part of M.I.T. students and staff. Every effort is made to assure that those entering the Institute are in sound health, and that that state of well-being is perpetuated. At the same time, as DR. DANA L. FARNSWORTH points out in "Maintaining Student Health at M.I.T." (page 459), general medical service (complete with dental, eye, and psychiatric clinics, x-ray and pathological laboratories, and an operating room) is immediately available when emergency or corrective measures are required. Dr. Farnsworth, Director of the Medical Department since the fall of 1946 when he succeeded Dr. George W. Morse, is assisted by a staff of physicians, nurses, and clerical workers who are required to take care of the 33,000 calls which are made annually, on the average, to the Homberg Infirmary. A biography of Dr. Farnsworth appeared in the June, 1946, issue of *The Review*.

**Security.** — If the nation's economic and political security (or the world's for that matter) depends on anything, it relies on science and the future generation. In this issue, VANNEVAR BUSH, '16, President of the Carnegie Institution of Washington, addresses himself (page 463) primarily to young people on the matter of science. "The Scientific Way," made available to *The Review* by former editor Frederick G. Fassett, Jr., is the major portion of Dr. Bush's recent address to winners of the Westinghouse science contest, and reflects the author's salty philosophy. But for all his eminent attainments, which have cast him in the forefront of American science, Dr. Bush is remembered in Cambridge primarily in terms of his earlier accomplishments. He is remembered not so much as the moving force behind "Science — the Boundless Frontier," for example, as he is known as coauthor (with William H. Timbie) of *Principles of Electrical Engineering*, as professor in the Department of Electrical Engineering, as originator and prime mover in the development of the differential analyzer, as dean of engineering, and as vice-president of M.I.T.

**Sobriety.** — Some sober thoughts on the relationship between engineering training and nonquantitative studies (commonly referred to as cultural or humanities subjects) are offered (page 465) by ROBERT G. CALDWELL, Dean of the Institute's Division of Humanities. In assaying "Engineering and Education," Dean Caldwell draws upon wide experience as student and teacher in history, English literature, economics, philosophy, psychology, and politics at half a dozen educational institutions including Forman College, Punjab University at Lahore. On the basis of his long career in humanistic and social studies and his broad knowledge of human problems gained during travel in various countries, Dr. Caldwell was well prepared to assume duties as minister of the United States to Portugal in 1933, and to Bolivia in 1937. He became dean of humanities in 1939.

**Solemnity.** — That the aggregate of man's vast engineering and agricultural activities are now on such a scale as to compete with nature in changing the face of Mother Earth is cause for solemn anxiety. In support of this contention, PAUL COHEN, '35, has assembled a convincing array of interesting statistics which he presents in "Man as a Geological Force" (page 469). Since his graduation from the Institute, Mr. Cohen has been a research engineer in mechanical engineering by vocation and a skillful writer and interpreter of science and engineering by avocation. Since 1938 he has been an editorial associate of *The Review*, almost each issue of which contains some unusual grist from his well-used typewriter.

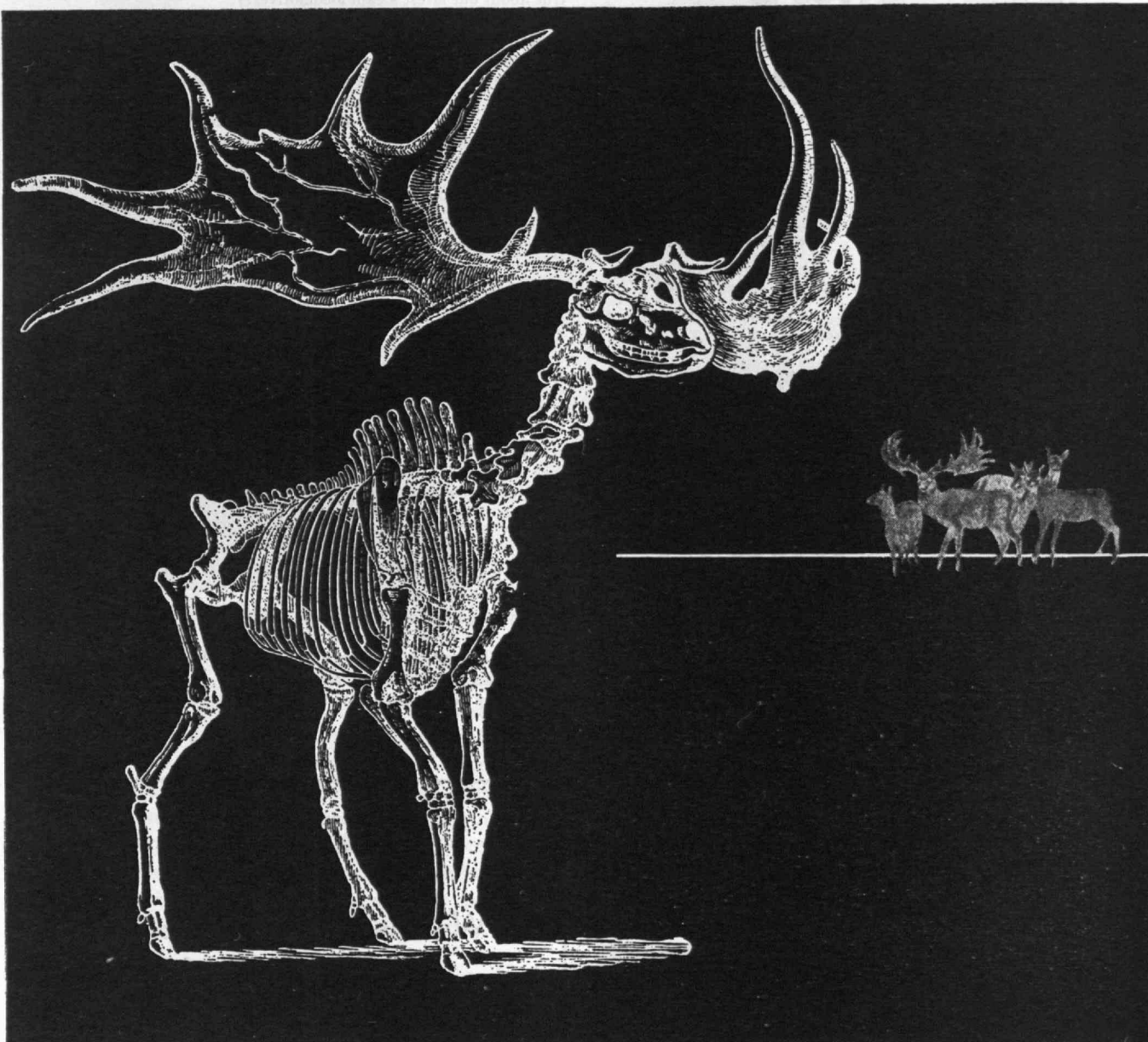
## THE ELK THAT ALSO RAN

Once upon a time an enormous elk with out-size antlers roamed the Irish forests. He was impressive but impractical; concentration of weight in the wrong place ruined his ability to meet competition.

The same thing can happen in modern machinery. Too much weight, especially in parts subject to rapid operation, can reduce efficiency consider-

ably. The machine may not become extinct, but it won't make many friends.

There is a simple, economical way of avoiding such troubles—specifying molybdenum steels. Their hardenability permits weight reduction with no sacrifice in ability to meet service requirements. Practical data on request.

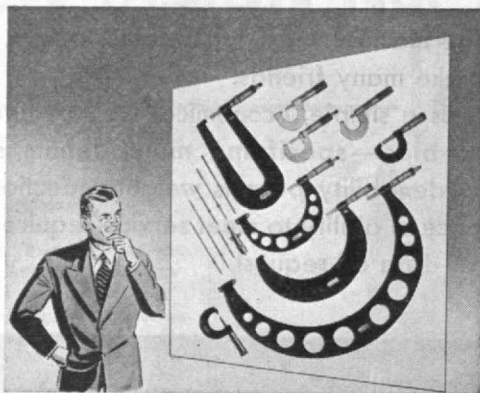


MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"  
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

**Climax Molybdenum Company**  
500 Fifth Avenue • New York City



Now that you can be "choosy" again



## STARRETT MICROMETERS FOR EVERY MEASURING OPERATION

Micrometer calipers play a key part at every stage of production from tooling up to final inspection. The wide range of types and sizes again available in the Starrett line makes it easy to pick the right micrometer for any measur-

ing or inspecting operation. And when you requisition *Starretts*, you know you're getting precision tools that have long been standard for accuracy, utility and durability in service.

Buy through your distributor

For a complete description of Starrett Micrometers and over 3000 other fine precision tools, write for Starrett Catalog No. 26 "L"

THE L. S. STARRETT CO. • ATHOL • MASS. • U. S. A.  
Greatest Toolmakers

## STARRETT

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK  
HACKSAWS • BAND SAWS FOR CUTTING METAL, WOOD, PLASTICS

## A RECORD FOR JOHNNY GEAR

Diefendorf precision-made gears have established outstanding performance records on the job, because every Diefendorf gear is designed and precision engineered for its particular job.

Diefendorf Gear Corp.  
D. W. Diefendorf '30, President  
Syracuse 1, New York

**diefendorf**  
★★★★★**GEARS**

## MAIL RETURNS

### Solid Diet Recommended

FROM HARRY A. F. CAMPBELL, '99:

In The Review of March, 1947, "Liquid Diet for the Iron Horse" makes pleasant reading. As of today, however, there is a very limited amount of "liquid diet," taking the world as a whole.

I believe that we would be a wise country if we took a long-range view and planned to use steam locomotives and all the coal they would need. We have coal in unlimited quantities in our own mines, while at the rate we are now using oil, it will be run out in 100 years. And as a mechanical and thermodynamic machine, the following facts are still true about our latest steam locomotives:

1. For the power it develops, the steam locomotive is the cheapest machine to build and its maintenance cost per mile run is continuously being reduced.

2. The simplicity of the mechanism of the steam locomotive is still unrivaled. A Diesel locomotive will stall if overloaded. An electric locomotive will burn out. A steam locomotive will slip its wheels but will, and does, start with very big overloads.

3. Careful tests have shown that the latest steam locomotives have produced one-cylinder horsepower on 13 pounds of steam when working at 250 pounds steam pressure, noncondensing, with eight pounds cylinder back pressure. Cylinder thermal efficiency is 17 per cent.

4. As to speed, the world's record over a measured mile for a steam locomotive is 126½ miles per hour made by a Pacific locomotive on the London and North Eastern Railroad of England. The Pennsylvania Railroad's latest duplex steam locomotive Class T.T.I. hauling 1,000 tons of passenger cars on the Fort Wayne division has run 72 consecutive miles at 102 miles per hour.

5. The serviceable life of a steam locomotive on first-class schedules is 20 years, and another 15 years on secondary schedules.

As a self-contained power plant, it has no rival — 100 feet long, 15 feet high by 12 feet wide and producing 7,000 cylinder horsepower. It is simple in construction, rigid, and of moderate capital outlay. Using a fuel of which the reserve supply is enormous, the steam locomotive may yet have a very extended life.

Brockton, Mass.

### No Concession for Artistic License?

FROM NEWTON S. FOSTER, '28:

My young sons (one 15 years old, and the other 11) want me to comment on the cover picture of the May, 1947, issue of The Review. Whereas the caption describes the picture as "Escapement," they think it should be "Ratchet and Pawl."

I wonder how many other Course II fellows are picking this bone with you!

Rutherford, N. J.

### Speed with Economy

We have recently completed  
our 6th contract for  
**ALLIED PRODUCTS, INC.**

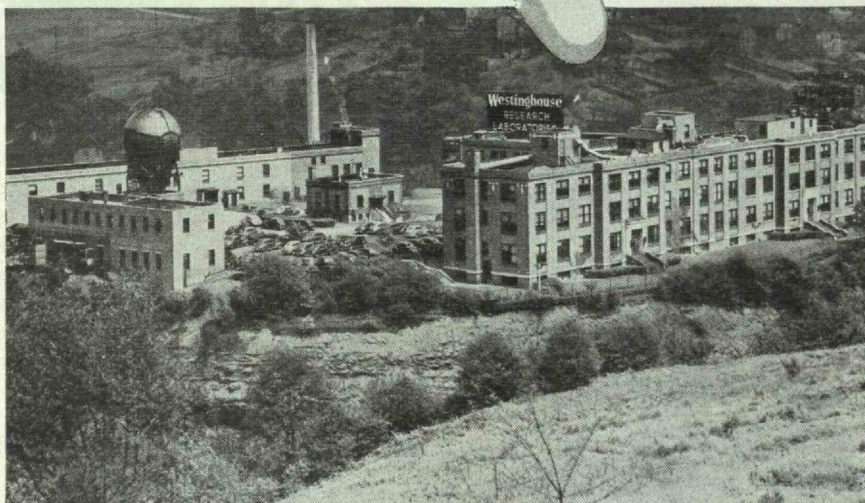
whom we have had the pleasure  
of serving since 1925

**W. J. BARNEY CORPORATION**  
101 PARK AVENUE, NEW YORK  
**INDUSTRIAL CONSTRUCTION**

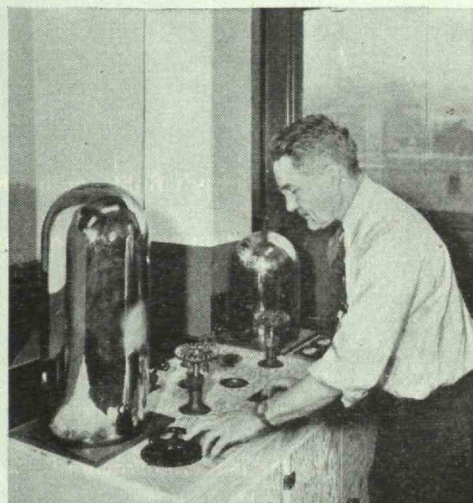
Alfred T. Glassett '20, Vice President



**research**  
**worth 100,000 dollars**  
**... yours for**  
**the asking!**



Part of Westinghouse research laboratories at East Pittsburgh, Pa.



Modern pumping system for evaporating substances under test in research on Selenium Rectifiers.

Westinghouse Selenium Rectifiers are not an overnight development. Before the present process was adopted, more than 9 years of continuous research—at a cost of more than 100,000 dollars—was spent in testing of foreign and domestic types and processing experiments.

The result has been a Selenium Rectifier comparable in quality to Rectox Rectifiers . . . long recognized as having a longer life and greater dependability than any other type of metallic rectifier.

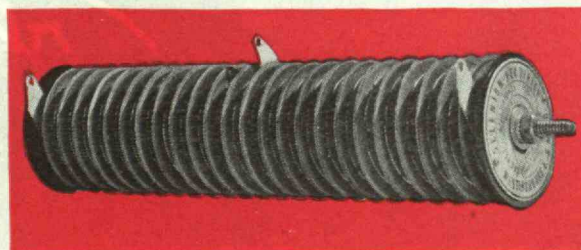
For instance: In a comparative test with other Selenium units under identical conditions—and at full rating—Westinghouse Selenium Rectifiers showed an increase in forward resistance of less than one-half that of the best units tested, indicating a longer life than any Selenium Rectifier now available.

No other Selenium Rectifier unit is backed by such an intensive research program, justifying our claim that Westinghouse Selenium Rectifiers are unexcelled where long life and dependability are prime factors.

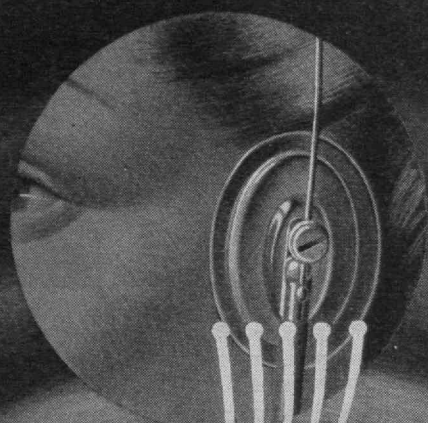
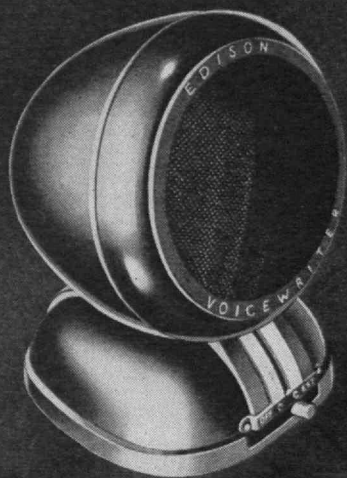
These new Westinghouse Selenium Rectifiers are ready for the market now. If you're a user of Selenium Rectifiers you can take advantage of this investment in research by outlining your requirements to a Westinghouse representative. Or write your nearest Westinghouse office for all the facts. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-21382

**Westinghouse**  
 PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

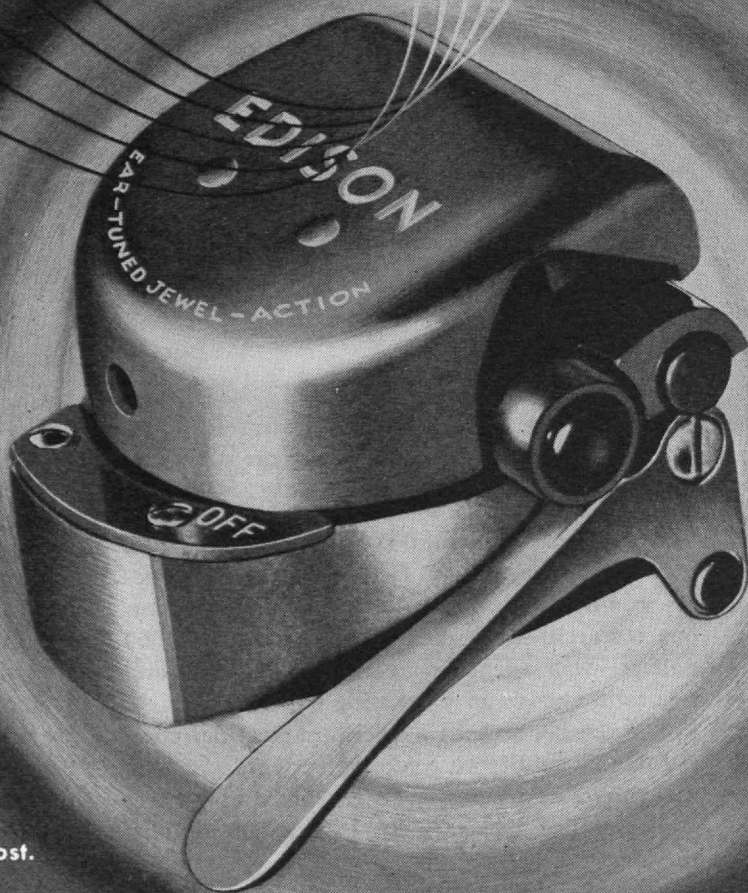
*Selenium Rectifiers*







In today's fight against high  
costs . . . written communications  
move faster, easier, at less  
expense . . . thanks to office  
systems made more efficient  
by the modern miracle of  
electronics. The Edison Electronic  
Voicewriter . . . identified  
by its Ear-Tuned Jewel-Action  
. . . corrects the rise and  
fall of the dictating voice  
. . . sees to it that the exact  
words spoken arrive on  
paper at lowest cost.



KAPPA

# Thomas A Edison

Thomas A. Edison, Incorporated, West Orange, New Jersey. (In Canada: Thomas A. Edison of Canada Ltd., Toronto 1, Ontario.)

1847 • THOMAS A. EDISON CENTENNIAL • 1947



# THE STORY OF SILICON



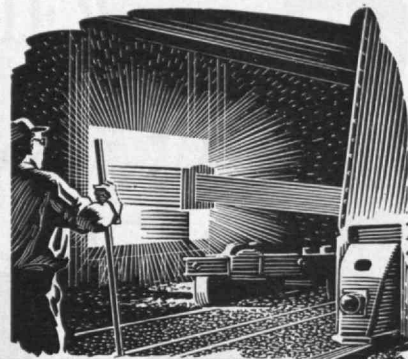
**EARLY START IN LIFE**

Way back in the Stone Age are found the first uses of silicon—in the tools and weapons used by prehistoric man. These were made of flint, which is almost pure silica, and in silica many centuries later the Swedish chemist Berzelius discovered the element silicon. He produced the world's first ferrosilicon in 1810.



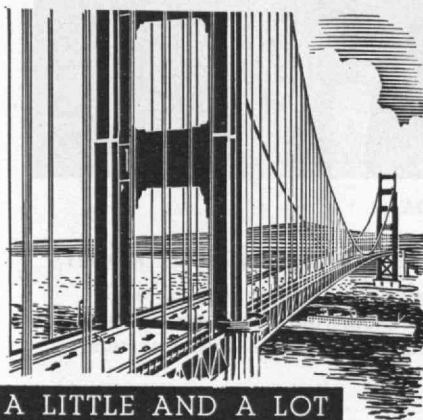
**LAND OF PLENTY**

"Earth former" is what silicon has been called, for it is present in most all rocks, clays, soils, and even many semi-precious stones. More than one fourth the earth's crust is silicon—the most abundant element, next to oxygen. Electromet digs into mountain after mountain for high-quality silicon ore.



**HOUSECLEANING SPECIALIST**

Silicon does a "clean-up job" in iron and steel production, serving as both scavenger and deoxidizer. From the molten bath it removes harmful oxides and gases. Silicon is used for refining practically all alloy steels and many grades of carbon steel. It is second only to manganese in its usefulness in steelmaking.



**A LITTLE AND A LOT**

From about 0.20 to 1.50 per cent silicon goes into many structural steels—such as those used for highly stressed parts of bridges. In larger percentage, sometimes as much as 17 per cent, silicon equips cast irons to handle highly corrosive acids in chemical plants. Silicon also serves as a softener in cast iron.




**MAGNETIC PERSONALITY**

The heart of the mysterious transformer is made of steel containing silicon. Silicon is essential in sheet steel for electromagnets, generators, and other electrical apparatus because of the special magnetic and electrical properties it imparts to the steel. It has brought about tremendous power savings.

## Cream Of The Crop

Electromet's interest in silicon dates back almost 50 years, for in 1898 the broad patent claims of de Chalmot were assigned to the Willson Aluminum Company, one of the predecessors of Electro Metallurgical Company. With its long experience in ferro-alloys production, Electromet naturally knows how to give all its customers alloys of high quality and purity. Write for the booklet "Electromet Products and Service," which will tell you more about silicon and the other Electromet alloys.

## ELECTRO METALLURGICAL COMPANY

Unit of Union Carbide and Carbon Corporation  
30 East 42nd Street  New York 17, N. Y.

ELECTROMET Ferro-Alloys and Metals are sold by Electro Metallurgical Sales Corporation, and Electro Metallurgical Company of Canada, Limited, Welland, Ontario.

**Electromet**  
TRADE-MARK  
**Ferro-Alloys & Metals**



You don't stay first  
unless you're best



**Unseen**, but contributing mightily to the long life a Goodyear tire gives you, is a *pre-tested* network of cords that make up its body.

*Why is pre-testing important?* You may not know it, but tire cord can be as variable as the weather.

Heat, cold, dampness, and dryness can all affect the strength of tire cord.

To get into a Goodyear tire, cord must demonstrate adequate strength under any and all conditions to which that tire may reasonably be subjected.

To protect your dollars—and per-

haps your life—Goodyear has the intricate machine shown above.

It can be made so that it will pull cord in temperatures ranging from 20° below to 400° above zero. It stretches and strains sopping wet cord; and the same cord bone dry.

Unless the cord can withstand the Goodyear breaking test *under all these conditions*, it isn't good enough for you, or for Goodyear.

**This helps** to explain why Goodyear remains America's first-choice tire for the 32nd consecutive year—*why more people ride on Goodyear Tires than on any other kind.*

#### MORE MILEAGE FOR YOUR MONEY

New tires deserve new tubes. Get both from your Goodyear dealer—your Tire Service Headquarters.



First—every year for 32 years

**GOODYEAR**

More people ride on Goodyear tires than on any other kind

# THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

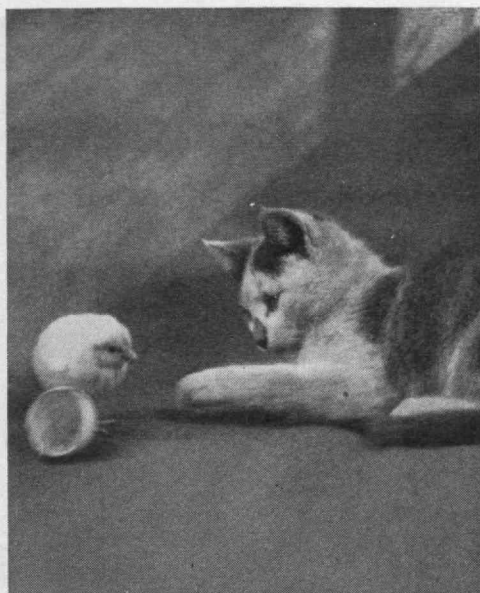


Photo by Harold M. Lambert

*Hasn't scratched — yet!*

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*From a photograph by Josef Scaylea from A. Devaney, Inc.*

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Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50; Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.: Alfred P. Sloan, Jr., Honorary President; Harold Bugbee, President; H. E. Lobdell, Executive Vice-president; Alf K. Berle, C. George Dandrow, Vice-presidents; Charles E. Locke, Secretary; Ralph T. Jope, Treasurer. Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 7-203, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the post office at Concord, N. H. Copyright, 1947, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address, for which both old and new addresses should be given.

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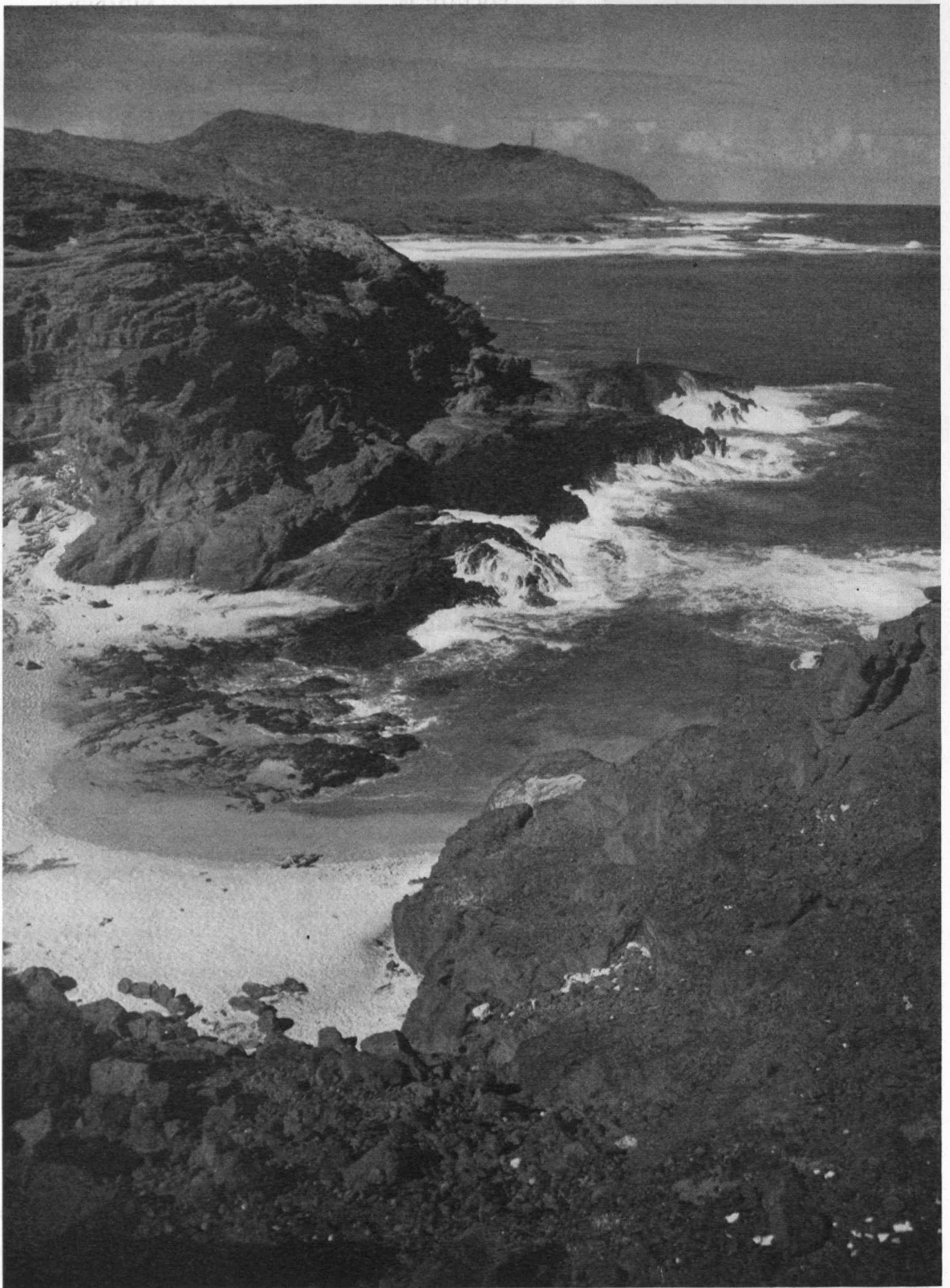
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Captain Stewart Fern

*Windward Oahu Shore Line*

# THE TECHNOLOGY REVIEW

Vol. 49, No. 8



June, 1947

## The Trend of Affairs

### Out of the Past

**A**UTHORITY for a reminiscent item calling attention to some of the pioneer work in roentgenology in the United States is the March 20 issue of the *Rockbridge County News* of Lexington, Va. Quoting its own columns of March 18, 1897, the *News* brings to light the following paragraph:

Professor S. T. Moreland of the chair of physics of Washington and Lee University gave a lecture on electricity and the Roentgen rays at the Y.M.C.A. building in Lynchburg Thursday night. Those who desired to remain longer than 10 o'clock had the opportunity of seeing an exhibition of the wonderful x-rays when Professor Moreland's little boy Edward was placed before the light and the bones of his body could be plainly seen through clothes, flesh and all.

It is quite possible that Professor Sidney Turner Moreland, absorbed in bringing the latest gifts of science to the notice of his listeners, may have exercised his professional (and professorial) prerogative in absent-mindedly failing to note the hour at which the demonstration took place. In the interests of the advancement of science we may, therefore, overlook the lapse of parental discipline which enabled a juvenile member of the family to postpone bedtime past the advanced hour of 10 o'clock. Besides, if any injury was done, the harm was at best of very short duration.

What the *Rockbridge County News* failed to mention, however, is quite as interesting as the above quotation. The *News* might have informed its current readers, for example, that "Professor Moreland's little boy Edward" was destined to receive his master's degree in electrical engineering from "Boston Tech" eleven years and three months after his bones were displayed to the Lynchburg residents. Whether or not parental influence had any bearing on the matter, the *News* might also have informed its present readers that the firm of Jackson and Moreland was formed in 1919 by the Moreland of the second generation in collaboration with one of his M.I.T. pro-

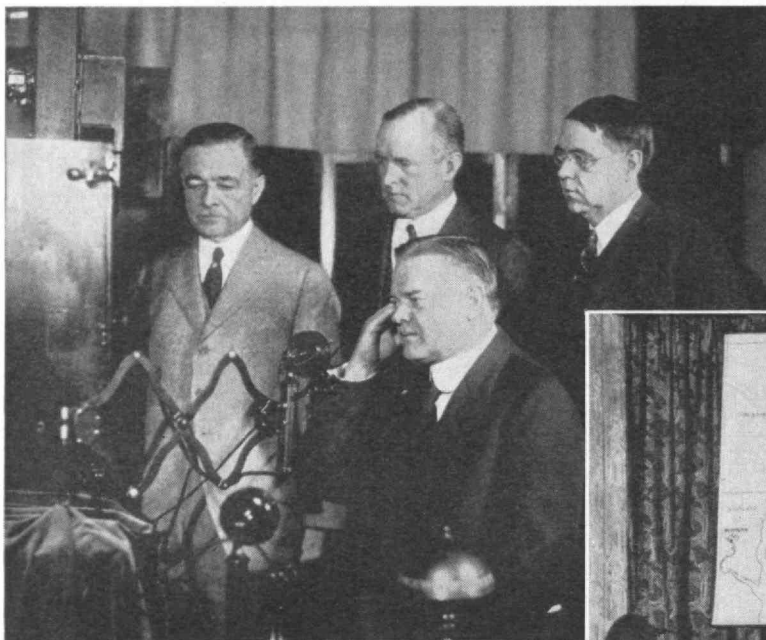
fessors, and head of the Department of Electrical Engineering, Dugald C. Jackson. Finally, the *Rockbridge County News* might have taken pride in pointing out that one of Lexington's native sons, "Professor Moreland's little boy Edward" grew up to become dean of engineering and later executive vice-president of the Massachusetts Institute of Technology.

### Science for the Next Generation

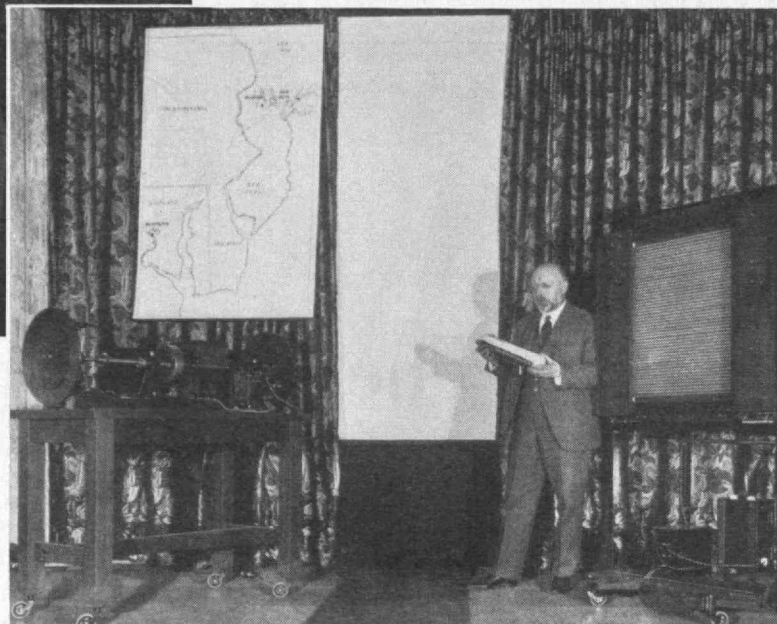
**T**HE current wave of rising costs and the strikes staged by teachers in Norwalk, Conn., Buffalo, N. Y., and in other cities in the United States has focused attention on the dwindling supply of properly trained teachers in the primary and secondary schools throughout the country. Many who, in years past, looked to teaching as a pleasant and respected career have been tempted to leave the classroom for the production line, the laboratory for the shop. To meet the steadily increasing cost of living, in which food prices and wages of labor have accounted for the major rises, still others have had to supplement their pedagogical earnings with whatever additional income could be garnered. Most of the difficulty has been in the elementary schools, although colleges have not been immune from these economic influences in spite of their current heavy enrollment which may be expected to continue for another three or four years.

Dr. Fletcher G. Watson, of the Graduate School of Education at Harvard University, reports that a survey of 18 of the country's largest teacher-training institutions showed that, of 120,000 students in these institutions, only 307 are specializing in science or mathematics. Our civilization is predominately the product of science and engineering. If Dr. Watson's statistics may be taken as a forecast of things to come, only three out of each 1,000 of the dwindling number of persons preparing to teach the next generation will be qualified to properly inculcate the fundamentals of science or mathematics in their pupils.





*Dr. Herbert E. Ives, in charge of the Bell Telephone Laboratories' demonstration of television two decades ago, holds one of the large photoelectric tubes used for picking up video signals. Original laboratory scanning apparatus is at the left, below the map tracing the path of the video and audio signals between Washington and New York. The television screen is at the extreme right.*



*Historical experimental telecast was made on April 7, 1927, when Herbert Hoover, then Secretary of Commerce, speaking in Washington, was heard and seen by an audience of 700 persons in New York. With Mr. Hoover at this historic event were (left to right): General J. J. Carty, Vice-president of the American Telephone and Telegraph Company; A. E. Berry, President of the Chesapeake and Potomac Telephone Company; and Judge Stephen Davis, Solicitor for the Department of Commerce.*

## *That Famous Corner*

**A**NTICIPATION is a stimulant. It brings forth the highest hopes, the most optimistic expectations for the future; it colors the drab present with the vivid hues of the morrow. There is, moreover, almost unending fascination in attempts to peer into the future and to determine what manner of thing lurks around the much publicized corner. To quote from an article in *The Technology Review*:

We are told that "television is just around the corner." As a matter of fact it definitely turned the corner of physical reality on April 7, 1927, when Herbert Hoover, then Secretary of Commerce, addressed an audience of over 700 publicists, seated in an auditorium in New York City, by means of long distance telephone and television circuits from Washington. The corner which remains is that where the value and cost of obtainable performance meet.

The sentences quoted above do not refer to a postwar resuscitation of the now threadbare prediction that we shall soon have television service in our homes to bring visual supplementation of sporting events, commercial plugs, and serials which, at present, enter the American home daily by way of the loud speaker. They are 15 years old and appeared as part of an article, "Looking 'Round the Corner" by J. Warren Horton, '14, published in *The Technology Review* of October, 1932. The paragraph is particularly appropriate at the present time not only because we have just passed the 20th anniversary of the first successful demonstration of long distance television communication, but also because the factors which prevented television from turning the corner in

1932 are pretty much those that still make large-scale television broadcasting impractical.

True enough, the 1927 experiments in television by the Bell Telephone Laboratories did not provide images of sufficient quality to be acceptable for widespread use in American homes where emphasis is largely on the entertainment value of the visual medium. But the 1927 experiments were in no way intended to provide a solution for commercial television service; rather were they designed to study the possibility of transmitting the highly complicated television signals over long distance wire and radio circuits. The mechanical scanning methods used in the 1927 experiments were no hindrance for the purpose of research, and if the detail of the 1927 pictures was poor by comparison with 1947 standards, the electrical images transmitted between Washington and New York represented the best that was possible of achievement two decades ago.

Since the 1927 demonstration, progress has been rapid. From a technical point of view television images, comparable in quality to those produced by amateur motion pictures in monochrome, could have been produced at any time within the past decade. Before this country took part in World War II, experimental demonstrations had been made of color television, and projection systems (which were capable of producing black and white images large enough to fill a motion picture theater screen) had been demonstrated to the press in New York. By developing new electronic tubes for use in television cameras, recent research has removed much of the practical difficulty of televising scenes under poor lighting conditions. More recently an all-electronic (*Concluded on page 476*)

# Maintaining Student Health

at

M.  
I.  
T.

By

THE development of student health service in colleges has been of comparatively recent origin, for up until about 25 years ago most colleges maintained a very small staff of physicians and attended to minor medical matters only. If any illness called for more than routine medication or advice, the student went to a private physician or more often received no treatment. During the past quarter century, however, there has been a growing interest in the field of student health until now most colleges assume that the health of their students is of as much importance as the development of their intellect. Providing students with clinical treatment and hospital care is a worthy part of a student health service but not the most important one. A vigorous student health department should be an educational unit so organized as to show the student and the community how to use medical care efficiently and wisely, so the graduating students may become leaders in their communities in efforts to maintain well-organized public health services, effective sanitation, and a wide distribution of modern medical treatment facilities.

The growth of the Medical Department at M.I.T. may be visualized by comparison of the statistics for the years 1913-1914 and 1945-1946.

In 1913-1914 the Institute physician maintained office hours from four to five o'clock on Mondays and Thursdays. During that year he saw 244 students for a total of 562 consultations.

DANA L. FARNSWORTH



Two dental hygienists are in full-time attendance to provide dental service as an important part of the Medical Department's activities. Complete equipment for two chairs and an x-ray machine are available.

He spent a total number of 62 hours in the clinic. In contrast, in 1945-1946, which was the last year under the directorship of Dr. George W. Morse, the Medical Department had a total of 32,955 calls. Not only had the amount of medical attention changed during the years but the whole conception of the care of the students of M.I.T. had become elevated. The completion of the Homberg Memorial Infirmary in 1928 and its remodeling in 1945 have furnished the setting for much of this growth.

Since 1919 faculty members and employees have been treated on the same basis as students. This year there are 8,300 persons eligible for medical service.

At the present time the Department interest in a student of M.I.T. begins before he enrolls at the Institute. A form is sent to the student to be filled out by his family physician which calls for certain pertinent information about the student which will be of use to the Medical Department in caring for his health needs while in residence at the Institute. From this form we learn whom to notify in case of serious illness, as well as the medical history of the student and his family. We learn whether or not he has had any nervous illness, whether he is subject to fainting attacks and if he is sensitive to any drugs. The family physician is asked if, in his opinion, the student may safely participate in athletic activities. With this information the possibility of inadvertent injury to the student's health during the first few days or weeks of college is minimized.

After he comes to the Institute, the student reports to the Medical Department for an appointment for a

*First-Class Facilities and Personnel Are  
Available When Remedial Action Is Required  
but Emphasis Is on Maintaining Health*





### Office and . . . .

*To maintain records for the more than 120 daily clinic consultations requires a staff of seven persons. The pleasant and comfortable reception room encourages students to avail themselves of the many services which are provided by the very well equipped M.I.T. Medical Department.*

physical examination. At this time he is asked to fill out a more detailed form, giving his own version of his past medical history, health habits, and his military history, if any. Then the examining physician checks him thoroughly, requests any indicated laboratory procedures, and determines what athletic activities he may be allowed to engage in safely. The student then goes to the Dental Service where a checkup of his teeth is made and appropriate x-rays taken. An x-ray of his chest completes the examination. Thus, within a very few days or weeks after he is admitted to the Institute, the Medical Department has a fund of information about each student's health, which enables it to be of greatest usefulness to the patient in case of subsequent illness. All the accumulated records of each student are kept in a folder which is brought from the files each time a student visits the Medical Department and is made available to the doctor at the beginning of the consultation. Although this is sometimes a useless procedure for very minor injuries or illnesses, yet it does help prevent unnecessary mistakes on the part of the physician. In case the student needs to be admitted to the Infirmary, then his record is transferred to the Infirmary for the benefit of the visiting physician there. During the remainder of the student's career at M.I.T. he receives an x-ray of the chest, a physical examination, or both, each year.

When a student becomes ill and reports to the Medical Department, he is seen either by an internist or a surgeon. The department is so organized at present that there are always at least three doctors in the clinic and sometimes as many as six at any one time. If specialized attention is needed, then the student can be referred to the laboratory, to the x-ray department, or to special clinics in ophthalmology (eye), otolaryngology (ear, nose and throat), dermatology (skin), neurology or psychiatry for the required treatment.

Because of the proximity of excellent Boston and Cambridge hospitals the Medical Department does not



### Reception Room

maintain a complete operating room for major surgical operations. If an appendectomy or other major operation is necessary, the patient is transferred to the hospital of his own choice, where he may also choose his own surgeon if he so desires. In most instances, however, the student is not familiar with surgical facilities or with the skill of the various surgeons, and as a result he abides by the judgment of the Institute physicians. After his operation has been performed and he is able to be transferred, he is then returned to the Infirmary for the period of convalescence.

When any student contracts a contagious disease, such as measles, mumps, or chicken pox he is transferred to the Haynes Memorial Hospital in Brighton.

The Institute has just completed an arrangement with the Massachusetts General Hospital whereby M.I.T. students may be admitted on an emergency basis to the surgical or medical wards of that hospital and receive adequate care regardless of the financial status of the patient. Thus the parents of any student of the Institute may be assured that modern and skillful treatment is available for their son or daughter as long as he or she is enrolled at the Institute.

### Hospital Care

The second and third floors of the Homberg Memorial Building contain 33 beds for the hospital care of students, faculty members, and employees. During the past two years this number of beds has been adequate, chiefly due to the fact that no epidemic occurred during that period. In the event of an epidemic of any sort, emergency facilities are available in the Emma Rogers Room or in space furnished in the building of the School of Architecture.

On the second floor of the Infirmary, which was newly renovated in 1945, there are 19 beds, two of which are in private rooms, two in a two-bed ward, three in another ward and six in each of two others. The arrangement in the large wards is such that the nurse on duty can maintain very close supervision over all the patients by means

### The Dental Service

Ever since its establishment by a grant from the Charles Hayden Foundation in 1940, the Dental Service has formed an invaluable part of the Institute health facilities. A dentist holds a clinic for one hour each day and two dental hygienists give full-time duty. Some indication of the scope of their work may be learned from the fact that during the first half of the present school year there were 2,582 visits for examination and treatment and 1,301 x-rays were taken. Only diagnostic, emergency, and prophylactic work is done in the clinic; if complicated mechanical treatment is needed, the student is referred to a private dentist.

### Psychiatric Service

From the administrative standpoint it is convenient to think of the student in an abstract way and to assume



*One of the best equipped and most frequently used units of the Medical Department is the Kales Eye Clinic, gift of Mrs. Kales in memory of her husband, William R. Kales, '92.*

of an ingenious architectural arrangement whereby windows from the nurse's station permit visibility to both of them. The kitchen and dining rooms for the nurses and employees are also located on this floor.

The third floor contains two wards with a total of nine beds and five private rooms. In addition there is an operating and sterilizing room, various utility rooms, and an apartment for the chief nurse. On the roof is a solarium which can house from two to four beds in emergencies, but which is usually used by convalescent patients.

When the clinic on the first floor is closed, first aid and emergency treatment are always available on the third floor. A physician is either in residence or on call at any time day or night throughout the year.

### Kales Clinic

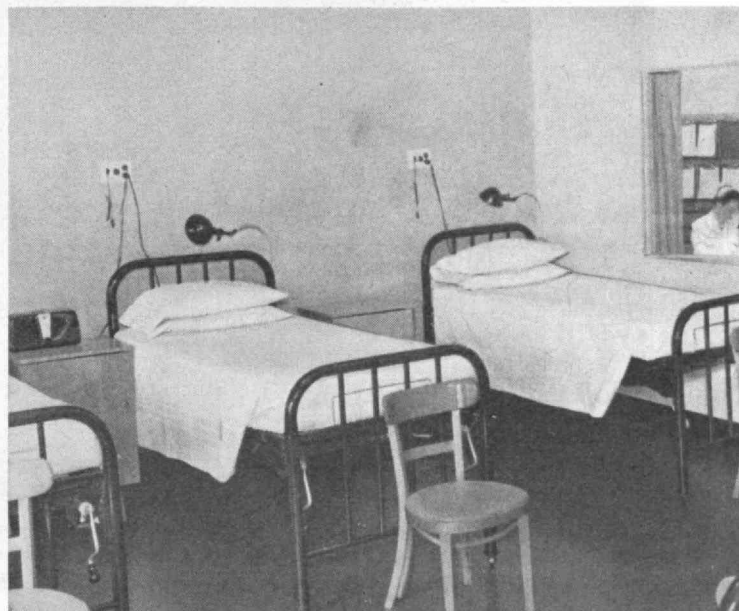
In 1946 the Kales Clinic for the diagnosis of diseases of the eye was established by Mrs. Kales in memory of her husband, William R. Kales, '92, who was formerly a very valuable and interested member of the Department's Visiting Committee. In this clinic the ophthalmologist has the most modern diagnostic equipment available, and ever since its establishment it has been one of the Department's most popular and useful clinics. During the present academic year an average of 150 patients a month have had ophthalmological consultations in this clinic.

In January, 1947, the scope of the Kales Clinic was extended to include diseases of the ear, nose, and throat, and suitable diagnostic and therapeutic equipment was installed. One of Boston's prominent otolaryngologists has accepted an appointment to the staff, and he now holds regular clinics two days of each week, in addition to responding to emergency calls.

*The two large wards on the second floor are so arranged that supervision is easily achieved from the central location of the nurse's station. The wards, of which there are four, are furnished with the most modern hospital facilities for the comfort of patients, and efficient medical care is provided by a capable staff.*



*Miss Alice M. Browne assists Dr. John W. Chamberlain, '28, in giving emergency treatment to a student in the first-aid clinic. Reluctance to seek medical treatment is minimized by the friendly and sympathetic attitude of members of the medical staff.*





that he should enroll in college and attempt to do the work required of him. If he is unable to pass his courses, then he should be dropped and someone else admitted to take his place. In fact, some administrators have expressed the idea that a good admissions officer can eliminate psychiatric problems by the simple expedient of not admitting potential neurotics. This concept overlooks the fact that every person is a potential neurotic and that whether or not disabling symptoms ever occur depends on a large number of variable circumstances. Experience with combat casualties during World War II convinced the writer that every man has his breaking point; that up to a certain point a person performs his duties in a satisfactory, highly integrated manner, but when the strain becomes too great the formerly well-adapted individual "goes to pieces" and is greatly handicapped by a multiplicity of symptoms. The sources of strain are usually numerous and varied and cumulative in action; the symptoms are apt to be abrupt and dramatic, and frequently appear to be brought about by a trivial occurrence.

The more highly skilled and sensitive a person is, the more vulnerable he is to factors of stress and strain in his environment. Successful training and the acquisition of skills and habits in a specialized field tend to counteract the tendencies toward neurotic behavior. The student, however, is frequently bewildered and perplexed by the numerous demands made on him before he has made a mature adjustment and may respond to them in a highly inappropriate manner. Hence the physician who is interested in emotional problems has the most favorable opportunity of any life period when he attempts to aid the college student in the solution of his problem.

Students at M.I.T. have problems confronting them which are very similar to those of college students everywhere in the United States. Some have to contend with insecurity at home because their parents are separated

or display open hostility toward each other. Others feel hopeless in the attempt to make a record as good as that of a brilliant father. An occasional student has difficulty in reconciling his religious beliefs and the scientific facts that he has learned. Sex problems interfere with the efficiency of some students. A brilliant student may develop faulty study habits early in his college career, acquire a false sense of security because of the ease with which he secured good grades during his first year, only to find later on that he has reached a crisis — is about to fail — all because he is unable to think through his problem alone. The influx of married students has brought the usual quota of domestic disharmony, especially since many couples are trying to adjust to each other under conditions which are trying at best. All these and many other types of problems are tackled by the psychiatric staff of the Medical Department with the idea in mind that it is much more worth-while to help an already highly skilled student make a better adjustment than ruthlessly to cast him aside and make way for a person who has not yet developed any symptoms. Over a 12-year period the writer has seen enough successes in psychiatric treatment of college students to warrant the conclusion that this work is of vital importance in any student health organization. It is, essentially, psychiatry for the normal person, and, as such, is of great educational significance for the whole community as well as for any individual.

#### *Co-operation with Dean's Office*

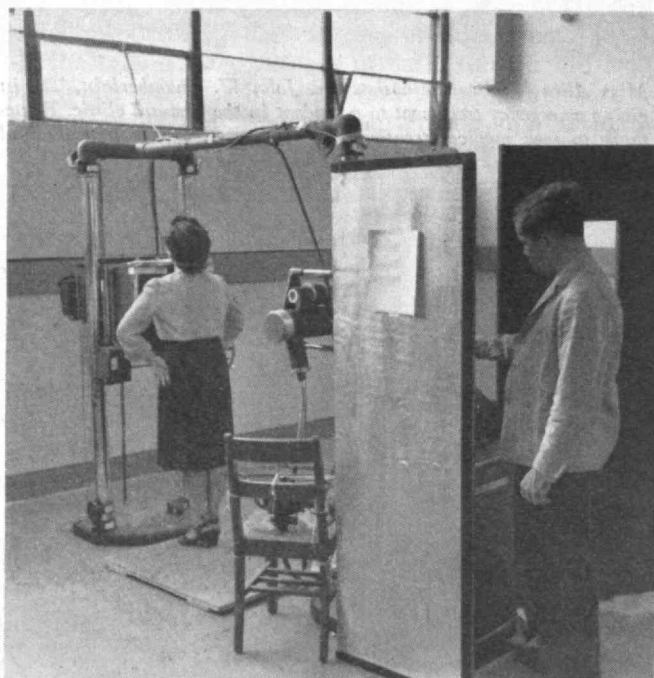
There is a close working relationship between the Medical Department and the Dean's Office, since many problems that students present must be worked out jointly by the two offices. The Dean of Students is a member of the Medical Department and, as such, attends staff meetings and is always aware of the policies and procedures of the medical staff. Care is taken, however, to see that the privacy of the student is not violated, and all medical facts are held in strict confidence. In no sense is the Medical Department a participant in passing on to the Dean's Office information about a student which might prove embarrassing to him. To do so would be a violation of the traditional confidence which is an essential part of the physician-patient relationship and would seriously limit the usefulness of the Medical Department in various ways.

Practically all cases of low scholarship are reviewed by the Medical Department before final recommendations are made by the dean to the Faculty in order that remedial measures may be taken if any health factor is present.

In the broad field of student morale and the promotion of mental health the deans and physicians are frequently quite dependent on one another. Very frequently disciplinary problems turn out upon investigation to be largely in the emotional field and hence require medical skill for their solution. Likewise, numerous strictly medical situations can be handled only by the sympathetic understanding and co-operation of the deans. The whole philosophy of the two departments, both in theory and practice, is one of complete co-operation in all matters affecting the welfare of students.

#### *Health Supervision of Athletes*

In addition to performing a complete physical examination on each student before he is allowed to participate in any athletic contest, a physician (*Continued on page 478*)



*Temporary x-ray equipment set up by the Massachusetts State Department of Health during April enabled more than 4,000 students, employees, and faculty members to have chest x-rays made at the Institute.*

# The Scientific Way

*Practical Application Often Results from Pursuit of the Scientific Way, but the True Aim of Science Is the Advancement of Knowledge.*

BY VANNEVAR BUSH

**I**N the hurry and bustle of our crowded and complex daily life, we all too easily become engrossed with immediate things to such an extent as to lose sight of lasting things. Hence we run a great danger, for unless we maintain the balance that comes from awareness of the basic reasons for action, we may become as futilely frantic as the squirrel on a treadmill or the rat in a maze.

It is from the point of view of these considerations that an inquiry into the scientific way may be made. Since I am, of course, an electrical engineer, such an inquiry as I may make reflects primarily the point of view of an engineer. It is fitting enough for an engineer to examine into science, however, for engineers and engineering depend upon science much as medical practitioners do, or much as the weaver both depends upon and fosters sheep raising, or the publisher is both the servant and the sponsor of literature.

The human being has four great sources of strength on which to draw for the energy which he puts forth in carrying on the varied activities that go to make up civilization and thus serve to distinguish mankind from other forms of life. They are his reason, the exercise of which finds clearest expression in law and science; his imagination, whence spring art, music, poetry; his physique, mastery and skilled utilization of which reaches consummation in the ballet and in sports; and his spirit, out of which grow the lofty conceptions of philosophy and the noble aspirations of theology and religion. Almost anything that man does, of course, calls to some extent on all four of these wellsprings. Certain groups of activities, however, draw more heavily on one of these.

In science, the great draft is on reason. Naturally imagination contributes in the building of a theory and in devising experiments to test its validity. Sometimes the physique is placed under heavy toll, particularly for

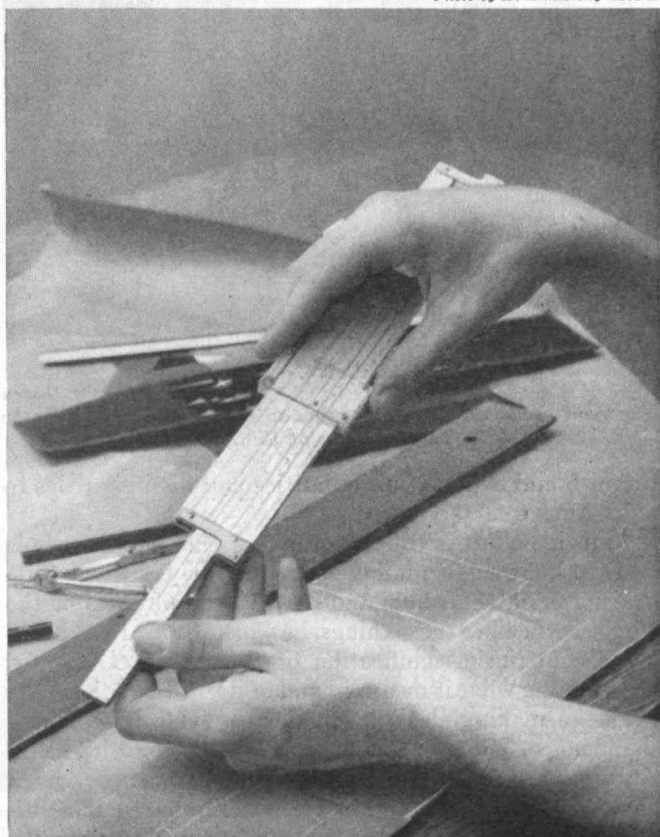
adroitness, steadiness, and dexterity in the assembly and use of apparatus and for reserves of stamina to meet the strain of long concentrated work. It can fairly be said, too, that spirit — maybe simply intuition, possibly something greater and more significant — often has in the work a part which is real and which can be sensed and recognized, even though it cannot be easily defined.

## *Method of Science*

But science, research, the scientific way, place the greater draft on reason. To follow this way demands at the outset a consistent willed effort at concentrating the analytical powers of the intelligence to classify and so to assimilate the necessary and sometimes very large body of existing knowledge. It demands then a different but equally delicate type of analytical skill to study the mass of knowledge thus accumulated, in order to discern gaps. Once a gap has been discerned and defined — this is another way of saying once the need and opportunity for research with a specific objective have been discovered — there must come into play a further sort of questioning thought. The possible ways of filling the gaps must be surveyed and evaluated, and the right selection must be made from among them. When procedure has thus been decided upon, the various steps in applying it must be planned, and the performance of the steps must be controlled. At last, when result has been achieved through these operations, the investigator is faced with the sometimes confusing and always exacting task of assessing his findings, relating them to the problem which he sought to solve, and determining whether they actually do solve it or whether they are deceptive and must therefore be

*In nearly all its aspects, our culture relies upon machines, implements, instruments, techniques, and processes which have developed from scientific knowledge.*

*Photo by H. Armstrong Roberts*





abandoned, no matter how much long and arduous work they represent.

What I have just sketched are of course not the only stages by which one travels the scientific way. There is a reverse course, of equal importance and of equal difficulty, which one often takes and which makes comparable demands on reason. This occurs when a new fact is apprehended as new, that is, when the investigator realizes that he has, in the process of an undertaking, encountered a phenomenon which is an addition to knowledge. To make this realization (to recognize the new as new when it is first met) demands an alertness of mind, a freshness of vision, which are maintained only by deliberate effort. It is perilously easy for man to go through his daily routines almost automatically and thus to relax his vigilance and let his responsiveness to events become atrophied. The follower of the scientific way who guards against this peril, however, and hence who knows when he has come on a new thing, vigorously exercises reason thereafter, to define the new fact, to limit it, and to dis-

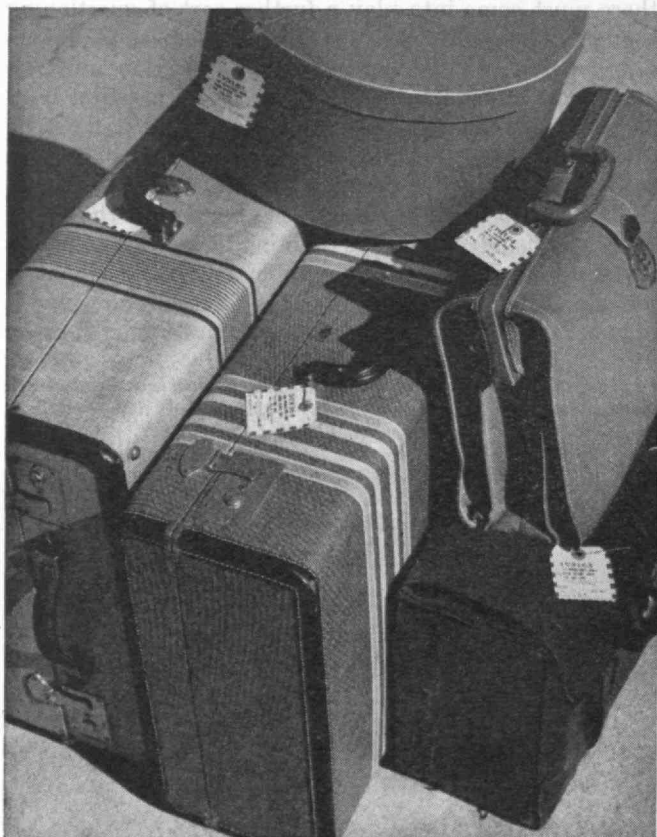
have not yet been brought to solution, and so increases the homogeneity of knowledge as a whole.

Now clearly, the intense joint application of the will and the intellect which is involved in following either of these courses along the scientific way, is no child's play. It is exertion of the most exacting sort. It is, in truth, plain hard work. There are a lot of easier ways of earning a living, and sometimes a more comfortable living in the material sense, than is the usual scientist's lot. Then why do scientists pursue a harder road than some of their contemporaries? Inquiry into some of the many reasons for their action will contribute substantially to understanding of the scientific way. In such inquiry, we may leave out of account the practical necessities of earning a livelihood. They apply with almost equal force to most if not all men, and hence have no special bearing on men's motives in making one or another choice of career. The question hence is found fairly sharply. What are the special satisfactions, the special obligations, of the scientific way?

### *Satisfaction of a Task Well Done*

As is true of any human activity which is carried on with full vigor and full sincerity, a basic motive, which for many people is by itself sufficient, can be found in the individual personal aesthetic satisfaction which comes from doing a thing well. This is the reward of self-sufficient virtuosity. Just as the virtuoso of the imagination can consider the phrase "art for art's sake" an all-encompassing answer, so the virtuoso of the reason may declare "reason for reason's sake" or "science for the sake of science" cause enough for his doing what he does. Think of the fly-fishing enthusiast who rigs his tackle and solemnly casts and casts again on dry land, sheerly for the zest of doing a difficult thing with all the skill at his command. This joy of the virtuoso, this satisfaction of the connoisseur, is one of the most powerful incentives; it has probably been a principal motivating force in many independent investigations in the most abstract and recondite subjects. I have no doubt that it meant much to Leonardo, to Newton, to Count Rumford, to Lowell. I doubt not that it means much to many among our contemporaries, and therefore is productive and vital in the expanding progress of science in our time. It demands a mind strong enough to avoid becoming precious, to avoid taking the position of the scientist who is reported to have boasted of his pride that, as far as he could determine, no conceivable use attached to anything he had ever done in research.

At the extreme from this remark (which really sounds too ivory-domed even to come out of an ivory tower, let alone an ivory laboratory) is the view that the practical usefulness of the results of research is reason enough for a man to enter upon science as a career. The argument runs that most research, most scientific endeavor, is undertaken primarily in order to produce immediate practical utility. It is true enough that the practical uses of the knowledge gained through scientific research bulk very large indeed in our civilization. In nearly all its aspects, our culture relies upon machines, implements, instruments, techniques, and processes which have developed from scientific knowledge. It relies upon them to a greater extent than has ever been true before, to such an extent that we plow and cultivate science as the Romans plowed and cultivated their fields. (Continued on page 482)



*Photo by Harold M. Lambert*

*The trend . . . has been steadily toward an easier and richer life for the ordinary human being.*

tinguish and explain its similarities and dissimilarities to older known facts.

Thus his effort is to relate the new thing to the whole body of knowledge, finding where it belongs and what its bearing is on the whole and on the several parts of the whole. As he does these things, he works toward establishing the intrinsic signification of the new fact, toward determining what it means in and of itself. In addition, he works to making clear and understandable its extrinsic significance. He traces out the ways in which the new addition to knowledge illuminates other matters which have hitherto been obscure. He contributes to the ultimate formulation of answers to other problems which

# Engineering and Education

## *Some Thoughts on the Education of Engineering Students to Prepare Them to Assume Positions of Leadership in a World of Increasing Technology*

BY ROBERT G. CALDWELL

THE central theme of higher education in our time is the conquest of nature for the comfort and convenience of man. To some a statement of that kind will seem entirely natural and proper. To others it can only appear deeply shocking. For the frank acceptance of such an analysis places engineering studies in the central stream of educational development and relegates many other subjects to the margins. But whether the trend is good or bad, the evidence for its existence is readily available to the thoughtful.

If one reads books on educational theory and objectives only, it would be easy to prove by quotations that higher education is not actually passing through any such revolution. The real evidence is to be found in other ways—in the published catalogues of our colleges and universities, with their increasing list of scientific and technical subjects, and in the quest of boards of trustees for presidents who have won their spurs as scientists, physicians, and engineers. It is to be found in the applications from students in foreign countries, the great majority of whom desire to come to America to learn the new tech-

niques which played so large a part in World War II and which in any case will give to other countries new navies, as in Turkey; new industries, as in Brazil; or a new agriculture, as in China.

Or, consider the letters from young veterans who want to complete an interrupted education with the help of government funds. Almost without exception, these young men and women desire an education which will help them, as soon as possible, to make a living. Where imagination has been aroused, or intellectual curiosity sharpened, it is often with regard to the apparently unlimited present opportunities of applied science.

To try to turn the stream in any other direction probably would be unwise and certainly futile. An increasing number of our educated men will be devoted (either as scientists or as administrators of business and government enterprise) to a deeply felt, if only half-expressed, purpose, namely, to conquer nature for the increasing comfort, convenience, and power of man. If this be so, engineering, broadly defined, is no longer a side show but the chief performer in the main tent.

It need scarcely be said that man's conquest of nature spells revolution, for this objective has but recently become the central theme of education. The meaning of education has always been the most exciting subject of human discussion. It could not well be otherwise, for the meaning of education is nothing else than the meaning of life, of which it is not so much a preparation as an integral part. Each age has reached its own idea of the purpose of education.

Thus, presumably, the Greeks sought wisdom, the ability to choose the good life, the development of critical insight, and Socrates could say: "The unexamined life is not worth living." Almost as clearly, the Romans sought civic virtue, the preservation of those habits of thought which created an empire. "What can the individual contribute to the state?" asked the Romans, or "How can he make a state worthy of the individual?" Later, in the Middle Ages, when the older empire had disappeared and new states had not yet appeared to which men might devote loyalty and allegiance, emphasis changed to the



*Veterans, completing an interrupted education with the help of government funds, almost without exception desire training which will help them, as soon as possible, to make a living.*



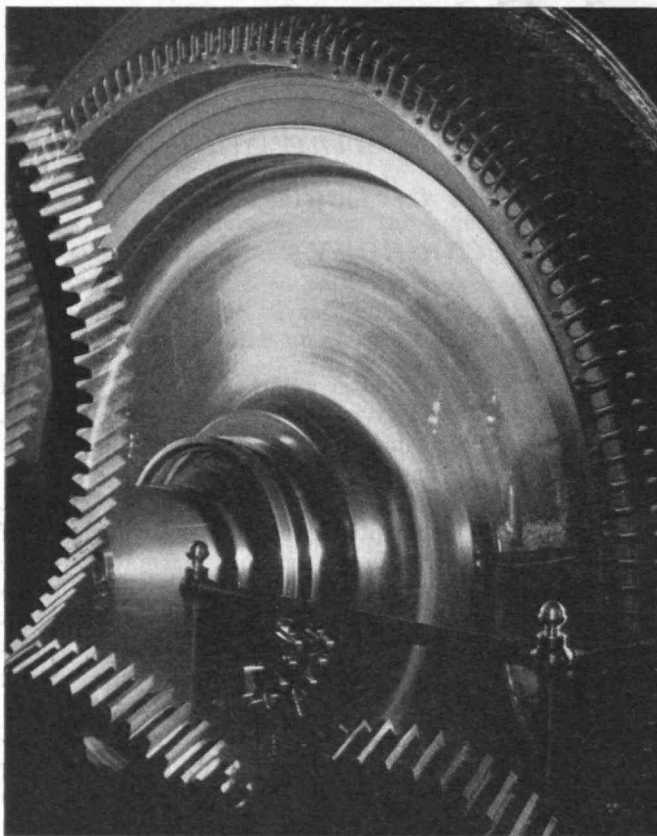


Photo by William M. Rittase

*It need hardly be said that man's conquest of nature spells revolution, for this objective has but recently become the central theme of education.*

discipline of the individual in an evil world. Such emphasis resulted in the development of the liberal arts, chiefly language and mathematics. It brought forth the trivium and the quadrivium by which, at very worst, the individuals might be more ready for a better world beyond the stars. Then came the rise of cities, the invention of printing, the discovery of America — in fact, the whole movement we call the Renaissance.

### ***Danger of Emphasizing Applied Science***

And now today, as a result of a whole series of industrial revolutions, spread over 200 years and over 50 countries, not only the content but the very heart of education is changing once more under our eyes. In reality, whether in theory or not, the large endowments, as well as the most ambitious students, are increasingly devoted to a new objective — the conquest of nature for the comfort and convenience of man. We may overcome disease by medicine, or space by aeronautical engineering, or we may produce new foods by chemistry. In any case, the objective is man's supremacy over, and control of, nature. If you doubt the trend in this direction, read those unphilosophical documents, the college catalogues and the enrollment applications in science courses, or listen to educational directors of large companies on radio programs.

The new emphasis on applied science, however, conceals dangers to the individual and to society. It has even practical disadvantages which have not gone entirely unchallenged. Thus, the head of a great industry, himself a distinguished engineer, wrote in a recent letter that he hesitated to employ graduates of technical schools — or

at least to give them genuine responsibility — until an inadequate education had been completed and integrated with other ideas in the school of experience.

Similarly, Sir James Alfred Ewing wrote in 1928: "I used, as a young teacher, to think that the splendid march of discovery and invention, with its penetration into the secrets of Nature, its consciousness of power, its absorbing mental interest, its unlimited possibilities of benefits, was in fact accomplishing some betterment in the character of men. I thought that the assiduous study of engineering could not fail to soften his primitive instincts; that it must develop a sense of law and order and righteousness. But the war came, and I realized the moral failure of applied mechanics. . . . I saw that the wealth of products and ideas with which the engineer had enriched mankind might be prostituted to ignoble use. . . . The arts of the engineer had indeed been effectively learnt, but they had not changed man's soul. . . . Does it not follow that the duty of leadership is to educate his judgment and his conscience? . . . Surely it is for the engineer as much as any man to pray for a spiritual awakening, to strive after such a growth of sanity as will prevent the gross misuse of his good gifts. For it is the engineer who, in the course of his labors to promote the comfort and convenience of man, has put into man's unchecked and careless hand a monstrous potentiality of ruin."<sup>1</sup>

Very recently, in considering a report of a committee to study engineering education after World War II, Robert F. Leggett made the following comment: "May I therefore presume to suggest that before the Report is broadcast throughout the land and finally placed in our records, a few more words might be added — words which will suggest that the young men we are to train should be helped to lift their eyes beyond the confines of one country, even of a very great country, looking rather towards the welfare of the community of nations as a whole; words which will help us to beware of the insidious attraction of current catch phrases in matters both academic and social, and to rely rather on the things which are true and of good report, words which will show that engineering educators do have a fine sense of values and one which may therefore help us to do our small share in trying to ensure that the works of our students shall not again be prostituted to ignoble use."<sup>2</sup>

All this reminds us of what Montaigne said in the Sixteenth Century: "Human society goes very incompetently about, healing its ills. It is so impatient under the immediate irritation which is chafing it that it thinks only of getting rid of this, careless of the cost. Good does not necessarily ensue upon evil; another evil may ensue upon it, and a worse one."

In our day, H. G. Wells went even further: "If man does not adjust himself very soon to the changes his inventions have wrought in his environment, he will become one with the dinosaur and the marmota, who in the changing world of their days could not readjust themselves quickly enough to make the grade."

The increased emphasis on applied science and the correlative acceptance of a new theme in education are, of course, a general feature of higher education and are

<sup>1</sup> Sir James Alfred Ewing, "A Century of Inventions," *Engineering*, Vol. 125, Nos. 3256 and 3257 (June 8 and 15, 1928), pp. 709-711 and 755-756.

<sup>2</sup> *Engineering Education*, 52:51.

certainly not limited to engineering colleges as such. Thus, for example, there is an increasing tendency for premedical students to devote a large part of their time as undergraduates, and an even larger share of their interest, to subjects directly related to later professional courses.

### *Uniqueness of Engineering Education*

In one respect, however, the engineering colleges are in a unique position; they have direct contact with students throughout all of their academic training for a professional career. Engineering is the one great profession in which the majority receive training in a typical four-year college course, leading to such degrees as bachelor of science in electrical engineering, and others of like character. More than nine-tenths of American engineers go no further. Only a limited number find, sometimes after a few years in industry, that they need additional training at the graduate level to fit themselves for research in pure or applied science. Hundreds of graduates of technical schools, however, use their undergraduate training for general purposes only, and after a few years find their real vocation in general administrative or executive posts. In other words, the engineer is first a human being with wide needs and aspirations; he is also a citizen who may contribute much to the community. But, more important, he is a potential leader of men with a need of a fine sense of values, interests, and skills other than those which apply primarily to the great profession of which he is a representative.

The educational dilemma thus presented is not resolved, however, by an easy division of all studies between those that are scientific, and therefore professionally useful, on the one hand, and others which are variously denominated liberal, humanistic, or general, on the other.

All of the better engineering colleges now devote a very large proportion of their time to so-called pure sciences which are obviously basic to engineering techniques. These latter are increasingly postponed, not to say relegated, to the graduate school, or, in increasing degree, to the necessary period of apprenticeship in industry. It is, of course, this very factor which distinguishes the

fundamental training of the engineering college from the important but different, and usually less rigorous, practical training of the trade school.

Now in a large measure, training in science with a view to later training in applied science is certainly liberal in the sense that new windows are opened and new interests are created. Similarly, the sciences are essentially humanistic. Once, perhaps in the middle of the Nineteenth Century, one could think of man with his dreams, hopes, and aspirations quite separate from nature with her rigid framework of mechanistic laws. That, surely, is no longer possible. We now see, as clearly as Plato or Bishop Berkeley might have done, that science is merely a great, perhaps the greatest, instrument of the human mind to help answer human questions and to resolve human problems. In other words, even in an age of increasing specialization, we come to the point where traditional and convenient distinctions between natural and social sciences, or between science and humanities, disappear.

For both practical and theoretical reasons, therefore, we cannot take care of general education first, in school or in a year or two of liberal arts, and then come to what is really interesting and contemporary. Young men rebel, and rightly so, when told that they must postpone the elementary study of pure and applied science. They rebel even though the chosen few may readily carry their fundamental studies into a later intensive period of advanced study in the graduate school.

### *Signposts and Landmarks*

For reasons of this kind, both the engineering profession as a whole (speaking through representative committees reporting in 1940 on the trend and scope of engineering education, and in 1944 on engineering education after World War II) and the engineering colleges and universities themselves have come to the almost unanimous conclusion that the four-year course in American engineering colleges has come to stay.

A substantial part of the time, expense, and effort of four-year engineering courses must be devoted to studies which have not been regularly regarded as part of the engineering curriculum. Such nonengineering studies do not aim at a second and different education, but are a

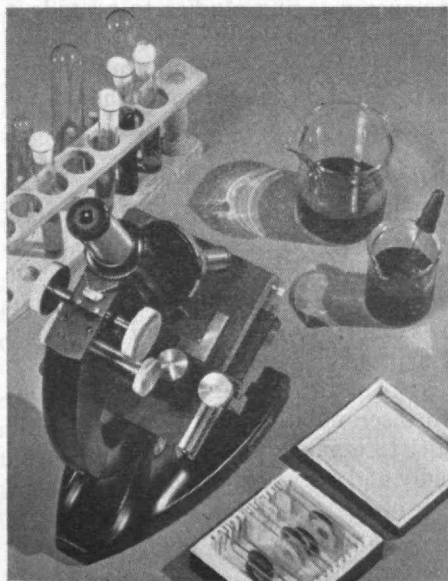


Photo by A. Devaney, Inc.



Photo by H. Armstrong Roberts

*We may overcome disease by medicine . . . or space by aeronautical engineering . . . or we may produce new foods by chemistry.*





Photo by Chester H. Pope, '09

*The important thing is a sense of perspective which comes from studying the past, and a realization that the world was not created in the year 1900.*

part of one and the same education looked at from the point of view of citizenship and life.

Back in 1924, *The Atlantic Monthly*<sup>3</sup> published an essay by the late Lord Moulton, celebrated English jurist, entitled "Law and Manners." Life, according to Lord Moulton, has two obvious divisions. First comes the realm of law, controlled by fixed principles, within the jurisdiction of the organized state. On the other extreme is a realm of freedom, in which each individual is at liberty to choose his own path. Between the two lies a narrowing but still enormous area which may be called the realm of manners. Here action is controlled by duty, public spirit, and good taste; the question is not: "What can I do?" but "What may I do?" This is a realm of values within which it is the fundamental duty of education to set up signposts and to establish landmarks.

The establishment of these signposts and landmarks is obviously an enormous job. It is a task which should begin in the homes with our earliest training and of which only a small part belongs to formal education. But academic education must do its part and contribute whatever it can. After all, there is something easy to recognize but hard to define which we may call character. In a democracy, the future of free enterprise depends on character; on character depends the future of free institutions, and of international and social peace.

<sup>3</sup> Lord Moulton, "Law and Manners," *The Atlantic Monthly*, 134:1 (July, 1924). Reprinted in July, 1942, page 31.

A committee of 21 engineers, which has studied engineering education since 1939, has agreed with surprising unanimity on three debatable points: (1) Subject matter which is not essential can and should be postponed. (2) Without detriment to undergraduate professional objectives, approximately 25 per cent of each student's time can be devoted to nonengineering studies to provide a background of general and cultural education. (3) Studies in the humanities and social sciences should proceed concurrent with studies in scientific subjects, and should not precede or follow them.<sup>4</sup>

### *The Pleasure of Cultural Pursuits*

The purposes of such a program are manifold. It aims to provide an understanding of the evolution of the social organization within which we live, and of the influence of science and engineering on its development. It should develop the student's ability to recognize and to make a critical analysis of a problem involving social and economic elements, to arrive at an intelligent opinion about it, and to read with discrimination and purpose toward these ends. The ability to organize thoughts logically and to express them lucidly and convincingly in oral and written English is another objective. Certainly we may expect the well educated to have (*Continued on page 490*)

<sup>4</sup> H. P. Hammond, et al., "Report of Committee on Aims and Scope of Engineering Curricula," *Journal of Engineering Education*, 30:555-567 (March, 1940).

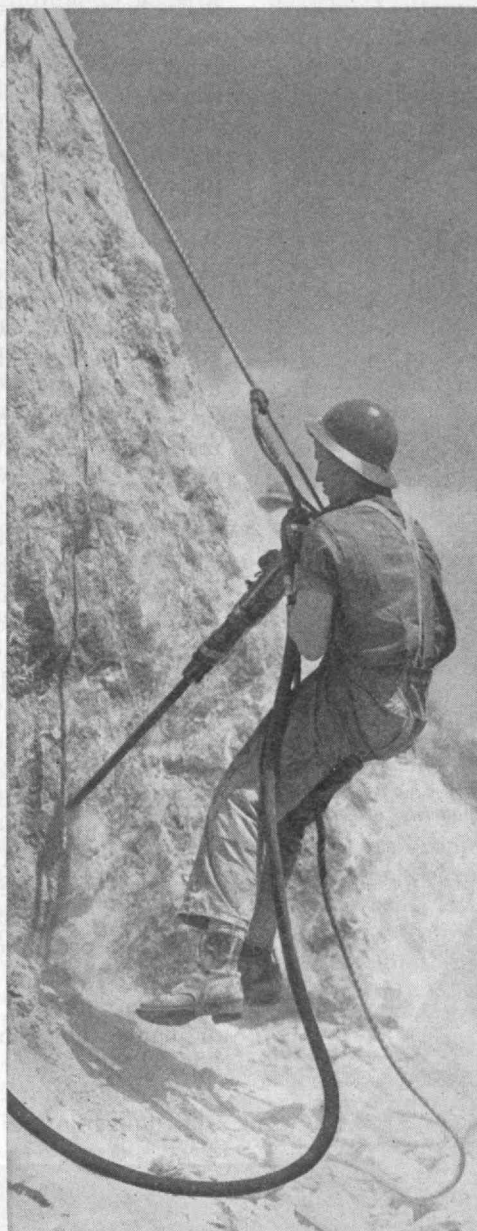
# Man as a Geological Force

BY PAUL COHEN

WHEN the geologists discuss the forces which are changing the contours and nature of our planet's surface, they generally give first place to the erosive and chemical action of water. Every year the rivers of the earth carry down to the sea some two cubic miles of debris. That this is no geological trifle is demonstrated by the fact that volcanic action, a secondary but still titanic earth-building force, is estimated to have pushed out on the earth's surface about 500,000 cubic miles of rock<sup>1</sup> during the entire period of our present geological era, the Cenozoic, an era that has already extended for at least 50,000,000 years, though it is the shortest of the periods into which the earth's history has been divided. For a more easily grasped yardstick, we can use our own Mississippi, which annually transports to the Gulf of Mexico in suspension, in solution, or by rolling along the bottom some 600,000,000 tons of material. Because the basin of the Mississippi is so vast, contains so many different types of rocks and has such a spread of climate and rainfall, the rate at which its level is being lowered, about a foot every 5,000 years, may be considered fairly representative for the earth as a whole.<sup>2</sup>

It is hardly likely that these figures will cause any staggering reaction to the reader. We have been conditioned to regard such processes as being inherently so diffuse, massive, and on such a huge scale that they cannot fairly be compared to the operations of man. They are akin to the distances of interstellar space, something to be regarded in humble awe (that is, until challenged by the promise of controlled nuclear energy).

What is one to say, then, to the cold statistic that the miners of this country are currently removing more coal from the soil of the United States than the Mississippi is carrying sediment into the sea? To be more specific, the figure for 1944 was 683,700,000 tons of bituminous and anthracite coal. If we also include other ores and minerals, and the amounts of earth and rock that must be moved to get at them, the total weight of material handled yearly in the course of mining operations is well in excess of 1,500,000,000 tons. Operations associated with the



*We are currently disturbing probably twice as much earth and rock as American rivers are carrying down to the sea.*

*At His Current Rate of Engineering and Agricultural Operations, Man Is Reshaping the Earth's Surface Vastly More Quickly than Nature.*

construction of airports, dams, roads, and other engineering works are not included. By mining alone, we are currently disturbing probably twice as much earth and rock as American rivers are carrying down to the sea.<sup>3</sup>

Considering the specific gravities of the materials involved, it appears that (again for this country) mining operations result in the removal of about one-quarter of a cubic mile of minerals per year. For the world as a whole the figure is at least two or three times larger. This is a geologically significant amount by virtue of brute volume, let alone because of the changes it implies in the concentration and location of certain key minerals in the crust of the earth.

England, once the world's source of tin, is now substantially devoid of that metal. Cradle of the industrial revolution and creator of an empire that rested on foundations of steel and coal, that island is now stripped of substantially all high-grade iron ore reserves. Many of her choicest and most easily mined coal seams are gone. Her blast furnaces are now fed either by "inexhaustible" foreign mines or by lean domestic ores that must be treated at extra cost before their reduction in the furnace. This is iron of which we are speaking, the fourth most common element and the second most common metal in the earth's crust. As for our own well-favored land, the near exhaustion of our high-grade iron ores in the Great Lakes region is now an accepted situation. Secretary of the Interior Krug has endorsed the St. Lawrence seaway as an economic cushion against the time "when present ores decline and foreign ores are imported." That the time is soon is indicated by the Bethlehem Steel Corporation which is preparing to spend tens of millions of dollars for the development of iron ore

<sup>1</sup> William J. Miller, *An Introduction to Physical Geology*, page 300 (New York: D. Van Nostrand Company, Inc., 1924).

<sup>2</sup> *Ibid.*, page 153.

<sup>3</sup> *Ibid.*, page 153.



properties and handling means in Latin America, in anticipation of large importations within a year.

American history, short as it is, is already studded with once fabulous names — among them, the Comstock Lode, the Tombstone district, the Lake Superior copper region in Michigan, oil fields in Pennsylvania, Ohio, Texas, and California — that are almost, or totally, exhausted as far as present mining techniques are concerned.<sup>4</sup> There is a persisting tendency for a relatively small number of elements, most of them metals selected with little reference to their abundance in nature, to be extracted from their ores and thereafter be maintained in a substantially pure form. A metropolis, such as New York or London, with its associated transport system and industrial plant, represents a concentration of iron, copper, lead, and zinc that rivals or exceeds in content the largest mines. Moreover, the metal deposits in such cities continue to grow whereas simultaneously the accessible ore deposits, starting with the richest, are depleted. There are few, if any, mines outside of the Rand district in South Africa that contain more gold than the vaults at

<sup>4</sup> C. K. Leith, J. W. Furness, Cleona Lewis, *World Minerals and World Peace*, page 88 (Washington, D. C.: The Brookings Institute, 1943).

*The most striking aspect of man as a geological force is the rate at which he has recently removed rock, dammed rivers, and changed the patterns of erosion.*

Fort Knox. To consider an aspect that is probably even more important than mining, that is, man's habit of turning forests into farms and grasslands into deserts, it has been declared recently that Alaska is now "about the only place on the American mainland" which can support newsprint or kraft paper development on what is termed, by industrial time scales, a permanent basis.

Although such items may be multiplied indefinitely, the most striking aspect of man as a geological force does not reside in the quantity of rock he has sifted, the rivers he has dammed, or in the erosion patterns he has changed through agriculture and deforestation. Rather it is in the extraordinary rate at which he has been doing these things lately, and in the signs that this rate may be still higher in the future. The world has done more mining in the last 40 years than in all preceding history.<sup>5</sup> Lead was being used in counterfeit money before 2000 B.C. and zinc has been known in metallic form since 1520. Yet it is estimated that almost half the lead and about 55 per cent of all the zinc have been mined in the past 25 years. When the Middle Ages ended, about the only materials mined in any quantity were gold, silver, mercury, iron, copper, lead, tin, precious stones, and a few nonmetallic minerals for building purposes.<sup>6</sup> Today there are more than 75 minerals of commercial importance, with new ones appearing every few years. Currently we are witnessing a world-wide search for uranium and thorium ores that may eventually result in the extraction of these metals in quantities approaching those for copper.

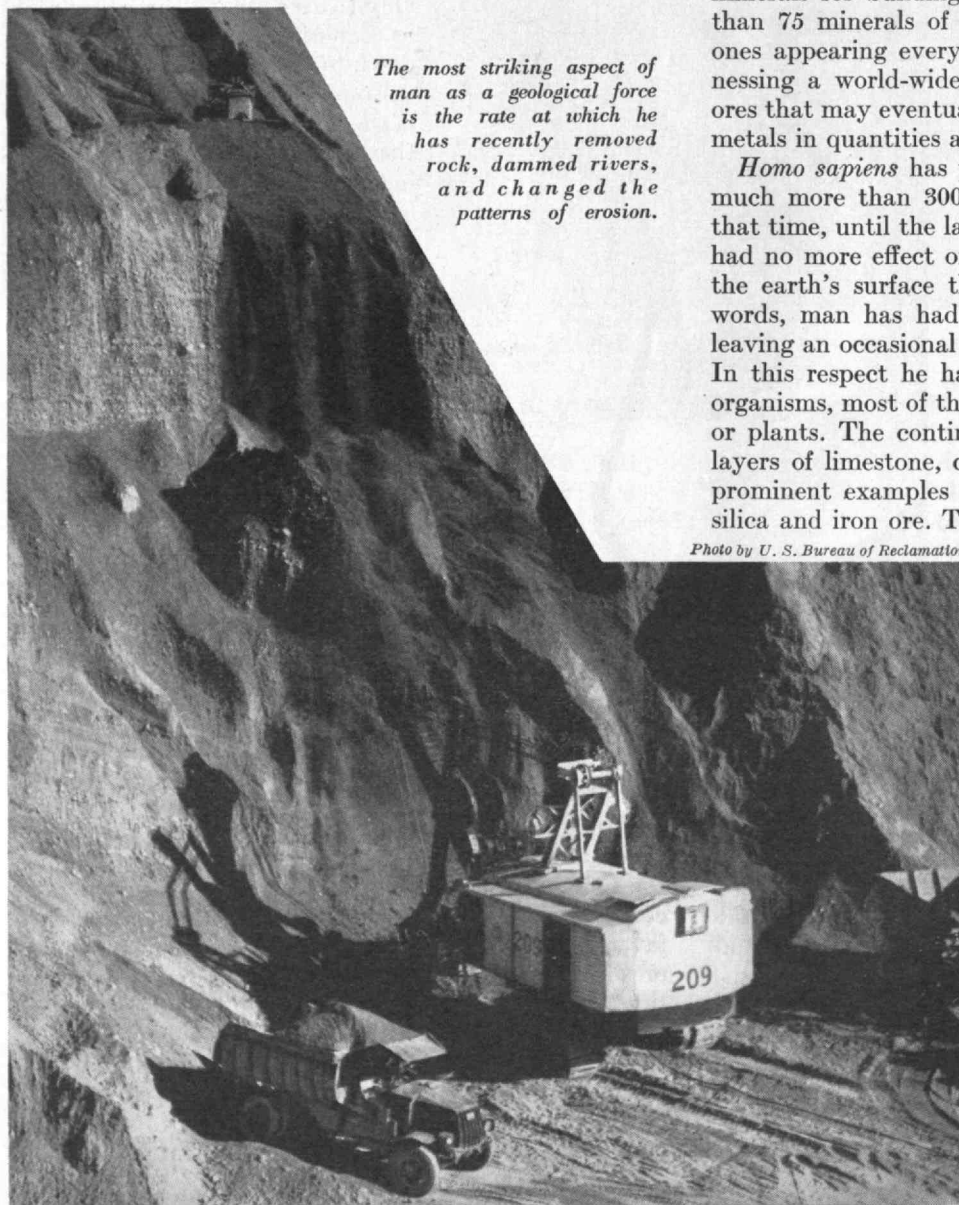
*Homo sapiens* has probably not been in existence for much more than 300,000 years. For the great bulk of that time, until the last 10,000 years at the most, he has had no more effect on the appearance and character of the earth's surface than any other mammal. In other words, man has had virtually no effect at all beyond leaving an occasional bone or chipped stone behind him. In this respect he has been far behind many humbler organisms, most of them single celled creatures, mollusks or plants. The continents are ribbed and spotted with layers of limestone, coral (to mention some of the more prominent examples that are biological in origin), and silica and iron ore. There would be no coal mines or oil

fields were it not for once living tissue. Against this great web of once organic rocks that leaves scarcely a portion of the earth untouched and is sometimes mountain high (for example, the Dolomites of the Tyrol, built up of the limestone skeletons of sea organisms), man's efforts are noticeable only with careful scrutiny. But this biosphere has been created over a period of time so long that, by comparison with the duration of recorded history, it sometimes seems to be equivalent to infinity. An illustration may make this statement clearer.

<sup>5</sup> *Industrial and Engineering Chemistry*, November, 1943, page 1131.

<sup>6</sup> Alan M. Bateman, *Economic Mineral Deposits*, pages 368, 525-526 (New York: John Wiley and Sons, Inc., 1942).

Photo by U. S. Bureau of Reclamation



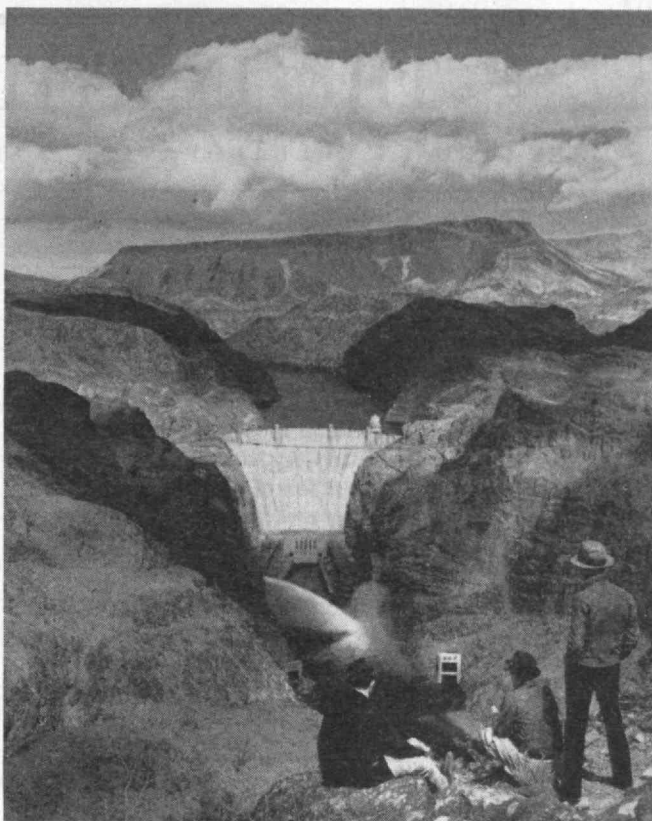
Because it takes about 10,000 years, under proper conditions, to build up a layer of coal one foot thick, it must have taken from about 1,000,000 to 2,500,000 years at least to produce what are now the anthracite beds of Pennsylvania.<sup>7</sup> That was about 200,000,000 years ago. Then came folding and faulting, erosion, and the wear and tear of several geological periods. Only about five per cent of the original deposits survived to the present era.<sup>8</sup> To these events man has added an emphatic footnote by mining one-third of the remainder in less than a century. If we continue our present rate of consumption, it will all be gone in another 165 years.

Since anthracite is the rarest and the most desirable of the various ranks of coal, it might be thought that this is an extreme case. Even if all grades of coal are considered, however, including our tremendous reserves of lignite, extraction at present rates would exhaust our supplies of solid fuel in about 2,500 years — geologically speaking, in the twinkling of an eye. As competitive sources of energy arise and as economic conditions and the general state of society command, these rates of consumption will undoubtedly change. Specific figures such as these are not advanced as prophecies or as arguments for conservation. They are merely some quantitative data on the manner in which man is currently disturbing the geological *status quo*.

The phenomenon is world wide. Long before the oldest geological era that can be dated by fossil remains, a great system of gold-containing reefs called the Witwatersrand was deposited in South Africa over an area that is at least 180 miles long, 90 miles wide, and about five miles thick.<sup>9</sup> Massive as is this system, it gives no promise of being immune from eventual exhaustion. Some of the richer and more accessible ore bodies have been mined for the past 60 years, no more than an average man's lifetime. In that period, close to one and a half billion tons of ore (yielding a minute 10,000 tons of gold) have been hoisted to the surface, some of it from depths of almost two miles. The largest air-conditioning plants in the world now alter the climate in the deepest bores to the point where it is endurable. Underground shafts and tunnels have been extended until in the aggregate they rival the earth's axis in length.<sup>10</sup>

Referring again to the mineral fuels, which are extracted in far larger quantities than any other minerals (although carbon is about the fourteenth most common element in the earth's crust), the total combined production of coal and petroleum is currently in excess of 2,000,000,000 tons per year. This amounts roughly to one ton for each of the world's inhabitants, or about 15 times their average body weight. If this ratio is not considered sufficiently fantastic, a more impressive figure may be obtained by considering the per capita output in a heavily industrialized country.

The weight of coal mined and oil produced in this country exceeds by a factor of perhaps 1,000 the weight of pure copper produced. But this comparison is not entirely valid, for as with many other valuable minerals, the weight of the pure product is an almost negligible fraction of the total weight of rock that is blasted, transported,



The reservoir behind Boulder Dam acts as a huge silt trap for the Colorado River so that below the Dam the Colorado now runs clear.

crushed, and winnowed to get that product. In 1944, the average yield of copper for ores mined in this country was 0.96 per cent, less than one part in a hundred. Copper, which constitutes about 0.01 per cent of the earth's crust, is not regarded as a particularly scarce material, and certainly not as a precious one. Where a material of really great value in man's eyes is concerned we may have a situation such as that at the Alaskan Juneau mine where the dredges must pick up, on the average, some 800,000 pounds of sand and gravel to obtain one pound of gold.

Less dramatic, perhaps, but just as important as the miner's drill, have been the ax and the plow. Mining tends to cause irreversible changes in the earth's crust, it is true, while forests and prairies will re-establish themselves, if permitted, and new soils can be created from the base rock if times running into the thousands of years are considered. But, in the meantime, accelerated erosion has created a pattern that would not have existed had not the hand of man interfered. A recent newspaper dispatch from Costa Rica can serve as a summary. In passing through that country, the Pan-American highway (which now stretches from Alaska to Patagonia with few interruptions and is something of a geological phenomenon in itself) must cross a highly mountainous and formerly inaccessible region. As soon as the road was completed, however, the natives fell upon the century-old trees and began to convert them to charcoal, which could be brought to market by the same road. Says the dispatch: "Erosion will join the charcoal burners in completing the picture of desolation." Eventually, no doubt, a cycle of conservation will be inaugurated. It has happened before. One of the great- (Continued on page 486)

<sup>7</sup> William J. Miller, *An Introduction to Historical Geology*, page 167 (New York: D. Van Nostrand Company, Inc., 1942).

<sup>8</sup> Bateman, *op. cit.*, page 637.

<sup>9</sup> Bateman, *op. cit.*, page 441.

<sup>10</sup> *Fortune*, October, 1946, page 108.



# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

## For Service in Chemistry

**F**ORMAL presentation of the Priestley Medal, highest honor in American chemistry, will be made in September to Professor Warren K. Lewis, '05. Selection of Professor Lewis as the recipient of this high honor was made at the 111th national meeting of the American Chemical Society at Atlantic City, on April 17. Professor Lewis, a leader in the application of chemical engineering principles to the production and refining of petroleum, was cited for "distinguished services to chemistry." He has made important contributions to research in other fields beside that of petroleum, and has been an outstanding teacher since 1905 when he joined the faculty of the Institute. In 1936 Professor Lewis was awarded the Perkin Medal of the Society of Chemical Industry in recognition of valuable work in applied chemistry.

### Class Reunions

Following are the latest reunion plans as announced by class secretaries:

- 1877 June 14, luncheon at the Hotel Statler, Boston.
- 1882 No reunion planned.
- 1887 June 13-15, Hotel Beaconsfield, Brookline. Friday evening through Sunday. Class dinner, Sunday, at 2:00 P.M. Chairmen, Richard E. Schmidt and N. P. Ames Carter.
- 1888 April 22, dinner was held at the Algonquin Club, Boston. Ralph Sweetland, host.
- 1892 June 12 (probable date), dinner meeting in vicinity of Greater Boston.
- 1897 June 10-13, Tuesday afternoon through Friday morning, East Bay Lodge, Osterville, Mass.
- 1902 June 12-13, East Bay Lodge, Osterville, Mass., adjourning on the 14th for Alumni Day in Cambridge.
- 1905 June 13-15, East Bay Lodge, Osterville, Mass.
- 1907 June 20-22, Oyster Harbors Club, Osterville, Mass.
- 1912 June 6-8, East Bay Lodge, Osterville, Mass. Ernest W. Davis, chairman.
- 1917 June 6-8, Wentworth-by-the-Sea, Portsmouth, N. H. Chairman, W. I. McNeill assisted by H. E. Strout.
- 1922 June 13-15, Hotel Rockmere, Marblehead, Mass.
- 1927 June 21-22, East Bay Lodge, Osterville, Mass. Ezra F. Stevens, general chairman.
- 1932 June 7-8, Wentworth-by-the-Sea, Portsmouth, N. H. Thomas E. Sears, Jr., chairman.
- 1937 June 12-14, Thursday afternoon through Saturday morning, Mayflower Hotel, Manomet Point, outside of Plymouth. Wives may attend.
- 1942 June 13, Campus Room, Graduate House, M.I.T. Dinner about 7:30 P.M. Bradford Darling, chairman.

Additional information will be available from your class secretary.

## To the Academy

**T**WO staff members and two Technology Alumni in industry were among 28 American scientists who have been honored by election to membership in the National Academy of Sciences at the conclusion of the Academy's annual spring meeting in Washington. The four receiving this recognition for achievement in science are: Arthur C. Cope, Professor in charge of the Department of Chemistry; Charles H. Herty, Jr., '21, research engineer and Assistant to the Vice-president, Bethlehem Steel Company; C. Richard Soderberg, '20, Professor of Mechanical Engineering; and Robert E. Wilson, '16, Chairman of the Board, Standard Oil Company of Indiana.

## Enlarged Food Laboratories

**N**EW laboratories, which have been equipped for the teaching and research activities of the Department of Food Technology, were opened for inspection by the Institute staff and invited guests on April 15. Named the Samuel Cate Prescott Laboratories, in honor of Professor Samuel C. Prescott, '94, who was for many years head of the Department of Biology and Dean of Science, the new laboratories occupy a considerable part of one wing of a large building on Vassar Street, Cambridge, built during World War II and formerly occupied by the Radiation Laboratory. Dr. Prescott, who retired in 1942, was present at the open house inspection.

During the war many important research projects in relation to food supply problems were carried out for the Army by the Department of Food Technology. The new laboratories greatly increase the potentialities of the Department for conducting research in its general study of methods of food production, preservation and packaging, and for adapting its work to peacetime requirements. The value of the Institute's program in food technology is indicated by the funds for fellowships which have been contributed for a period of several years by six of the country's large food concerns.

In addition to the general office for heads of the various divisions, the laboratory comprises three teaching laboratories for junior, senior, and graduate instruction; a large and well-equipped laboratory for pilot plant experimentation; a laboratory of food chemistry; and excellent laboratories for bacteriology and microbiology. A series of laboratories for research in nutritional problems, a fat metabolism laboratory, a flavor research laboratory, a packaging research laboratory, and rooms for controlled storage experiments are also a part of the facilities now open to students. Several consultation rooms, a seminar room, and a small working library and reading room aid in making the laboratory a convenient and efficient place for the training of men for the food industry, as well as for carrying out studies on a wide range of food problems.

The new facilities have been planned and brought to completion under the direction of Professors William L.

Campbell, '15, and Bernard E. Proctor, '23, and their associates who have managed to provide superior facilities economically.

It is expected that the Department of Food Technology will be housed in its present quarters until the fruition of a long considered plan for a separate permanent building, which, it is hoped, will become a reality within a very few years.

### Mathematics Head

**W**ILLIAM T. MARTIN has been appointed head of the Department of Mathematics at the Institute," President Karl T. Compton recently announced. Dr. Martin will succeed Professor Henry B. Phillips who will retire on July 1. Professor Phillips joined the teaching staff in 1907 and has been head of his Department since 1935.

Dr. Martin was graduated from the University of Arkansas with the degree of bachelor of arts in 1930. He then entered the University of Illinois which awarded him the degrees of master of arts in 1931, and doctor of philosophy in 1934. During his studies there Dr. Martin also served as a part-time instructor from 1932-1933. He carried on postdoctoral studies as a National Research Council Fellow in mathematics at Princeton University and the Institute for Advanced Study from 1934-1936.

He joined the teaching staff at M.I.T. in 1936, serving as an instructor until 1938, when he was promoted to the rank of assistant professor. From 1940 to 1941 he was on leave of absence from M.I.T. as a research associate in mathematics at Princeton University, and from 1943-1946 he was professor and chairman of the department of mathematics at Syracuse University. Returning to the Institute in September, 1946, Dr. Martin was appointed professor of mathematics and executive officer of the Department.

He is the author of numerous research papers in complex variables, difference equations, and random functions. With Professor S. Bochner of Princeton University he is coauthor of a forthcoming book on "Functions of Several Complex Variables," and is associate editor of the *Duke Mathematical Journal* and the *American Mathematical Monthly*.

### Relating to Alumni Day, June 14

**N**INETY-NINE members and guests attended the 256th meeting of the Alumni Council in the Graduate House on April 28 to transact business for Technology Alumni and to listen to instructive talks by President Karl T. Compton and Professor Carle R. Hayward, '04. As usual, the meeting was called to order at 7:00 P.M. by Harold Bugbee, '20, President of the Alumni Association.

Charles E. Locke, '96, Secretary, was reported to have had many daily visitors during his stay at the Homberg Infirmary. In his unavoidable absence the report of the secretary was read by Ralph T. Jope, '28, Treasurer. Changes in class affiliation for four men were reported. Visits to local M.I.T. clubs were made by F. Alexander Magoun, '18, to New Bedford on April 4; Erwin H. Schell, '12, and Robert M. Kimball, '33, to Worcester on April 10; President Compton to San Francisco on April 3, Los Angeles on April 7, and Chicago on April 14; Thomas P. Pitré and H. E. Lobdell, '17, to Cincinnati on

April 21; Jerome C. Hunsaker, '12, to Newark on April 15; Horace S. Ford to Cleveland on April 24; and Harold E. Edgerton, '27, to New York on April 22. Nominees for posts on various committees were proposed and elected by the Council.

Parke D. Appel, '22, chairman of the 1947 Alumni Day, informed the Council on plans to date for the annual Alumni Day which is scheduled to be held on Saturday, June 14, 1947. He stated that the symposium topic would be "Aviation: Today and Tomorrow" and that the symposium speakers would be: General George C. Kenney, '11, Strategic Air Force Command; Arthur E. Raymond, '21, Vice-president, Douglas Aircraft Company, Inc.; and John C. Leslie, '28, Vice-president, Pan American World Airways; The presiding officer will be Jerome C. Hunsaker, chairman of the National Advisory Committee for Aeronautics, and head of the Departments of Mechanical and Aeronautical Engineering at M.I.T. Present plans include the customary noonday luncheon in Du Pont Court, and a banquet at the Statler Hotel in Boston in the evening, with a stein of new design available for Alumni. This year plans are made for the wives of Alumni to have a banquet of their own in the Salle Moderne at the Hotel Statler, and then to attend an evening Boston Pops concert.

President Compton, who recently returned from a trip to Hawaii and visits to M.I.T. clubs in Hawaii, San Francisco, Los Angeles, and Chicago, told of interesting experiences in participating in the activities celebrating the 40th anniversary of the founding of the University of



William T. Martin

... becomes head of the Department of Mathematics at the end of the academic year when Professor Henry B. Phillips retires.



Hawaii. During World War II this University took a leading part in war research and its present program calls for continued leadership in carrying on cultural and scientific study about the Pacific Islands and the countries in the Far East. President Compton also spoke of the activity of the Technology clubs he had recently visited, mentioning especially the club in Hawaii which is taking an active part in sponsoring civic activities.

At the conclusion of President Compton's stimulating remarks, President Bugbee introduced Professor Carle R. Hayward, '04, honorary lecturer in Metallurgy, whose topic was "What Metals Will Your Grandchildren Use?" The Council was reminded that the total tonnage of all nonferrous metals used in the world amounted to less than seven per cent of steel production. The development of the steel industry was traced from its early beginnings around Saugus and Braintree, Mass. and Cornwall, Pa., to its present gigantic operations of mining in Michigan and the Mesabi region in Minnesota. In spite of depletion of some of the larger and richer iron ore deposits, the demand for increasing amounts of steel has been offset by improvements in the technology of mining operations and in developing stronger steels which permit reduction in the size of members for a given load. The important work of the late Professor Robert H. Richards, '68, in developing techniques of handling and extracting metals in the Minerals Dressing Department was recalled.

United States production of copper, which accounted for half the world production in 1929 now accounts for only one-third of the world's supply. Large deposits of

copper exist in Canada, Chile, and South Africa, but with the depletion of high-grade ores in this country, the process developed at M.I.T., making it possible to mine the huge porphyry deposits in Utah and Arizona when the copper content of ore was less than one per cent, is assuming increasing importance.

## Director of Athletics

**A**PPPOINTMENT of Ivan J. Geiger as Director of Athletics at M.I.T. emphasizes the Institute's interest in promoting healthy recreation as well as academic attainment. Mr. Geiger comes to M.I.T. from the United States Coast Guard Academy at New London, where he has served as executive officer of physical education and intramural athletics.

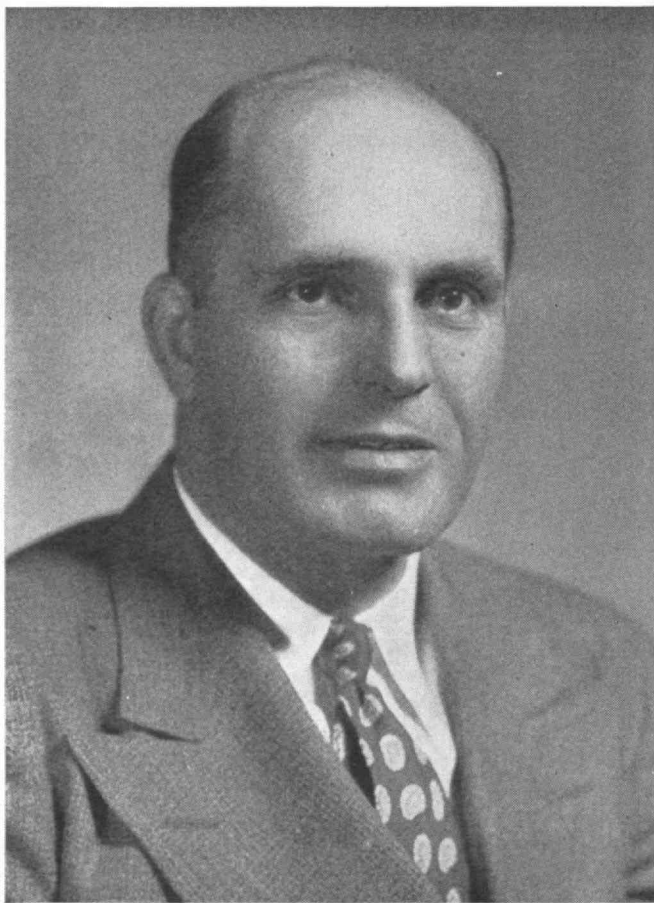
As the Institute's first director of athletics, Mr. Geiger will direct a growing program of athletics and recreation for a student body of more than 5,000.

With the rapid postwar increase in enrollment, which raised the Institute's registration more than 70 per cent above normal peacetime registration, it became apparent that student interest in varsity and intramural sports, as well as various supplementary forms of recreation, would require full-time supervision of these activities. As a result, Ralph T. Joep, '28, Secretary of the Advisory Council on Athletics, recommended the appointment of an athletic director who could give all his attention to the athletic program, to which Mr. Joep since 1935 has given part of his time in an advisory capacity, in addition to his duties as treasurer of the Alumni Association and business manager of *The Review*.

Mr. Geiger majored in biological sciences and in 1932 was graduated from Bluffton College with the degree of bachelor of arts. He then entered Ohio State University for additional training in health and physical education, which led to the award of the degree of bachelor of science in physical education in September, 1933. Since that time he has continued studies in the Ohio State University Graduate School and will complete his thesis requirements for the master of arts degree this summer.

He began his career in coaching and physical education in the schools of Vanburen, Ohio, where he served as coach of football and basketball, and instructor in health and physical education from 1933 to 1937. From 1937 to 1942 he served as director of athletics and physical education in Vanburen schools.

Mr. Geiger entered the Coast Guard service with the rank of lieutenant junior grade in June, 1942, as a specialist in athletics and physical education. His first assignment was as assistant to Commander Jack Dempsey in the physical training department at the Manhattan Beach Training Station in Brooklyn. He transferred to the Coast Guard Academy in August, 1942, to assist in the physical conditioning program for reserve cadets in the Reserve Officers Training School. He was assigned to the athletic and physical education staff of the regular Coast Guard Academy as head wrestling coach, track coach, and instructor of physical education in 1943. Two years later he was appointed executive officer of physical education and intramural athletics. Mr. Geiger retired from the Coast Guard with the rank of lieutenant commander in July, 1946, and remained on the staff of the Academy with the same duties under civil service status. He will come to his new post at M.I.T. early in June.



Ivan J. Geiger

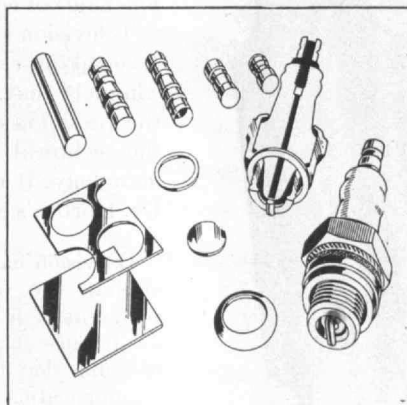
... leaves the United States Coast Guard Academy to take up new duties at M.I.T. in June as the Institute's first director of athletics.

# BUSINESS IN MOTION

## *To our Colleagues in American Business ...*

The automobile industry is regarded by suppliers as a highly desirable customer. Its orders are large, and strict insistence on quality standards keeps a company on its toes. The industry's demands for ever better materials, higher production, and lowest possible prices consistent with quality have been in part responsible for making the automobile business America's greatest, giving employment to one-seventh of our country's workers.

It sometimes surprises industrialists who do not have direct contact with this great industry when they learn how painstaking is the attention given the smallest item. Take parts for spark plugs, for example. Revere supplies free-cutting brass rod for the terminals. This metal makes swift manufacture by the millions possible in automatic machines. Free-cutting brass is selected from the many available types of brass, because it is best for this fabrication process.



A spark plug also has gaskets, three of them. The obvious material for a gasket that is subjected to heat is copper. But what copper? There are many coppers. Silver-bearing copper is chosen, because it resists annealing, or softening, at spark plug temperatures. This copper is not the cheapest, but the best for its job of maintaining the seal required to prevent blow-by and loss of power.

Take an automobile down, part by part, and you find from 37 to 73 pounds of copper and copper

alloys, each type chosen with the greatest care, no matter how small the individual part. Just as nothing seems to be too big for the automobile industry to accomplish, so nothing is too small for it to study. To be a supplier to that industry is indeed both an honor and a responsibility.

It does not seem that the future will produce a rival for the automobile industry in size, but more and more industries are rivaling it in their meticulous search for ways to make better goods, faster, and at lower prices. In that endeavor Revere collaborates closely with many of its customers. Any other supplier who is asked, is only too glad to place his accumulated knowledge at the disposal of buyers.

No company can stand alone; it must obtain the cooperation of many others, and utilize available experience in such diverse fields as design, material selection, fabrication, public relations, merchandising and advertising.

In every industry there are capable sources of such help, and today more than ever it is essential to go to them.

I like to think that American industry is a collaborative as well as competitive whole, in which employers and employees, sellers and buyers work together, each factor contributing in its own way, and each profiting accordingly, as in the automobile industry.

*Donald Dallar*

*Chairman of the Board*

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## THE TREND OF AFFAIRS

(Concluded from page 458)

system of color television has been developed experimentally, although commercialization of this system is reputed to be several years in the future. In addition, wartime research in the electronics field has produced many improved techniques which will be directly applicable in further improving television images.

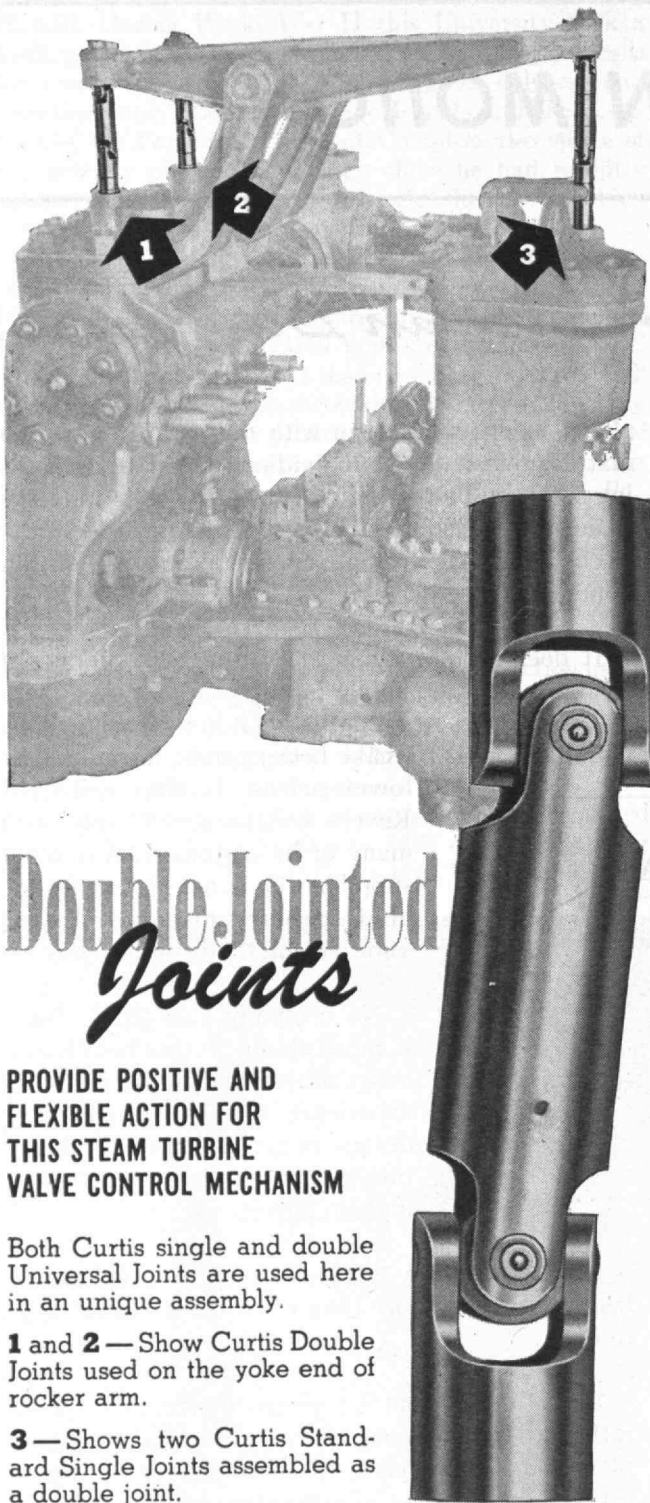
All this would seem to indicate that technical limitations are hardly the bottleneck in making television currently available in the United States. Yet, except for licenses granted to a few dozen television stations (most of which are in the process of construction rather than engaging in maintaining reliable service) and except for the operation of television receivers in so few American homes as to be statistically insignificant, television service in the United States is still nonexistent.

Unlike most engineering developments, television has suffered from an affliction which, with the increasing publicity that applied science has received in recent years, may cast its blight on other technological advances as well. This has to do with the avidity with which new products of science are sought by large portions of the population. The war has finished the job (if it needed finishing) of converting the skeptics.

Television affords an excellent example of the complete reversal of earlier skepticism. The reversal is now so complete that the public is ripe and conditioned to desire the products of science and engineering decades before the technical and economic stability can be brought to homology. It may be said — and in fact has been said in Dr. Horton's earlier Review article — that:

Television has a peculiar significance in the progress of the machine age, not because of any grandeur of its technical achievement or because of its contribution to human well being, but because it marks the final defeat of the skeptic. It seems probable that this most recent accomplishment of electrical communication has rung down the curtain on that scornful chorus which has chanted the refrain, "It can't be done," at the approach of each new application of science since the steam engine, if not since the wheel and the lever. For perhaps the first time in history the public has foreseen an invention in advance of its realization, and, encouraged by the results, has replaced its old pessimism by a too abundant optimism. The technically sophisticated, however, will do well to temper their scorn; they are merely reaping their own whirlwind.

The matter of importance to engineers and scientists is that the public, having anticipated an invention in advance of its realization, is likely to be oversold on technology. It matters not that public misconception may have been entirely unintended or that it might have arisen because those in technological pursuits failed to make clear the true significance of their demonstrations. If, within a reasonable time, realization does not follow disclosure of successful experiments it may be expecting too much of a public to evaluate the reasons for delay. It is not improbable that interest in television has already waned before its services have really begun. After two decades of suspense in this fast moving world, and one decade of technically acceptable images, will the average man produce a verdant blush of enthusiasm when television service finally does round that famous corner?



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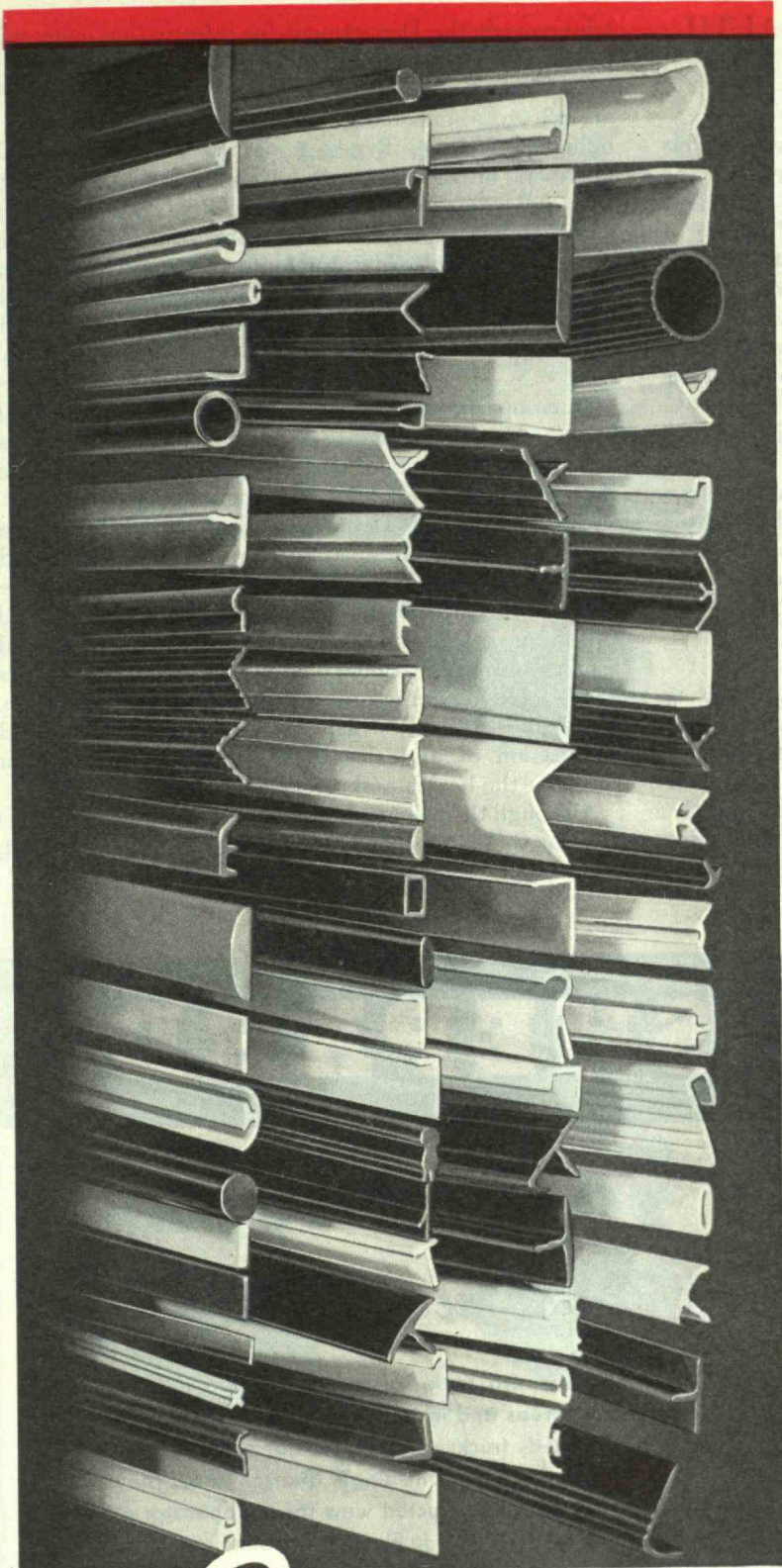
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## MAINTAINING STUDENT HEALTH AT M.I.T.

(Continued from page 462)

is present at all regularly scheduled athletic events. This physician, either directly or through the trainer, has the entire responsibility for determining whether a student is able to play or not and of course takes no chance of injuring a student's health. All injuries treated in the clinic which have been incurred in athletic activity are reported at weekly intervals to the Athletic Association, giving the coaches and others interested data which may be of use in determining the basic physical condition of the men out for various squads.

Plans are now being made for reorganization of the Institute's athletic and recreational facilities, and it is anticipated that under the new program, which is expected to play an important role in the general health of our students, the Medical Department will serve the athletic director in an advisory capacity whenever its services are desired.

### Preventive Medicine

An important part of the Department's activities is the prevention of disease in every possible manner. One of the requirements for admission is that the prospective student be immunized against typhoid and smallpox. These and other immunization procedures are constantly being done by our staff. Institute personnel planning travel to other sections of the country or to foreign coun-

tries consult the Department for information concerning health conditions there.

Because of predictions of public health authorities of an influenza epidemic during 1946-1947, inoculations of influenza vaccine, Types A and B, were offered to all members of the Institute. About 1,200 accepted the offer and were immunized. The expected epidemic did not materialize except for a mild outbreak in March during which 43 cases of respiratory infection, more severe than ordinary colds, were hospitalized in the Infirmary. Of this number, only two had received influenza vaccine. This number is too small to be of statistical significance, however.

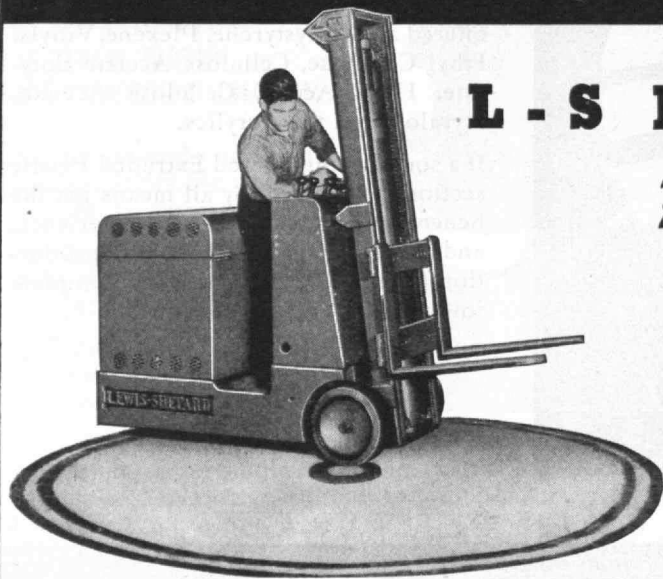
In co-operation with the Massachusetts State Department of Health a program of making x-rays of the chests of as many members of the Institute as possible was carried out in April and May. The early response was not as encouraging as the Department had hoped, but enough information was obtained to warrant the recommendation that annual x-rays of Institute personnel be required. Tuberculosis still remains the chief cause of death in the college age group, and the Institute hopes to be among the leaders in the educational field in eliminating this disease.

The Medical Director is a member of the Safety Council of the Institute, which has as its main function the elimination of any situations or circumstances which threaten the health and safety of Institute personnel.

Although the Department does not have the facilities to care for the members of the families of students, faculty,

(Continued on page 480)

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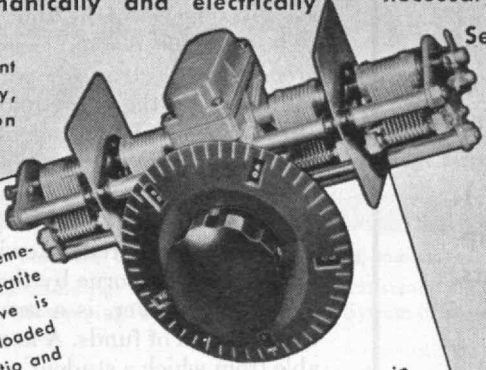
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interchangeable and can be depended upon to fit the specifications called for. Production flows smoothly when you use National parts because their closely-tooled tolerances and sturdy construction make replacements unnecessary...

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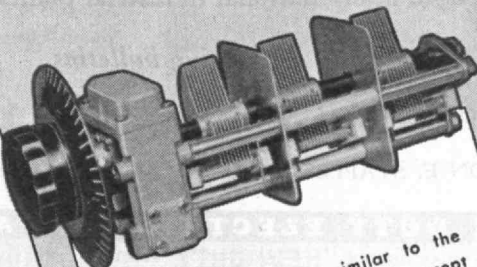
Send for your copy of the new National catalog containing over 600 parts today.



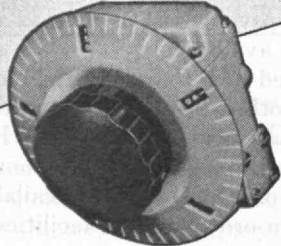
This PW Condenser is of extremely rigid construction with Steatite stator insulation. The drive is through an enclosed preloaded worm gear with 20 to 1 ratio and the rotor shaft is parallel to the panel. Plate shape is straight-line frequency when the frequency range is 2:1.

PW Condensers are available in 2, 3, or 4 sections in either 160 or 225 mmf per section. A single-section PW Condenser with

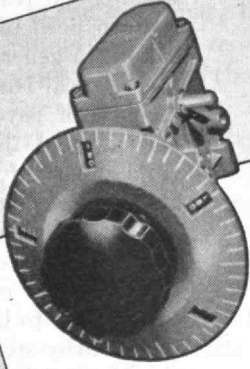
grounded rotor is supplied in capacities of 150, 200, 350 and 500 mmf, single spaced, and capacities up to 125 mmf, double spaced.



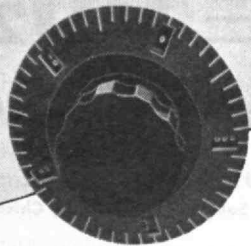
The NPW model is similar to the other PW Condenser models, except that the rotor shaft is perpendicular to the panel. Three sections... each 225 mmf.



NPW-O uses parts similar to the NPW Condenser. Drive shaft perpendicular to panel. One TX-9 coupling supplied.



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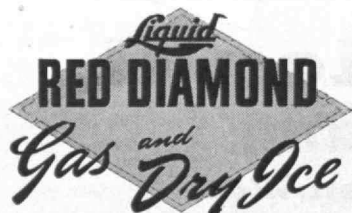
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## MAINTAINING STUDENT HEALTH AT M.I.T.

*(Continued from page 478)*

or employees, it does stand ready to act in an advisory capacity in such matters as choosing a physician, gaining admission to hospitals, and in furnishing directory service for those who need to consult specialists in other sections of the country.

The Medical Department is financed from general Institute funds. In order to supplement the amount of money available and to increase the services rendered by the department, a charge is made for some special services. Residence in the Infirmary costs the student from \$2.00 to \$3.00 per day, and x-rays, unusual laboratory procedures, electrocardiograms, eye refractions, and consultations by the dermatologist and otolaryngologist are at the expense of the student though at much lower rates than are paid by the community. Whenever a student is transferred to another hospital for major surgery or for the care of communicable diseases, he is responsible for all expenses incurred; likewise, if a consultant is needed, his fee must be borne by the student or his family. In no instance, however, is a service denied to a student because of lack of funds. A needy student fund is also available from which a student may borrow money for unusual medical expenses.

### *Visiting Committee*

The Visiting Committee on the Medical Department met at the Institute on November 6, 1946\*, at which time the previous year's work was reviewed and pressing needs of the Department were discussed. It was brought out at the meeting that returning veterans were adjusting very well to the resumption of their academic studies and were in need of psychiatric attention only to the same extent, in general, as civilian students. In the opinion of the Medical Director, however, a marked increase in the amount of psychiatric time available to students was needed, and the committee voted to recommend the employment of a full-time psychiatrist as soon as a suitable person should become available.

The committee also voted to recommend the employment of a part-time physiotherapist. Because several of the activities of the Department are seriously handicapped due to lack of space, it also voted to recommend that nearby space in the Institute be made available to the Medical Department in order that its facilities may be used in a more effective manner.

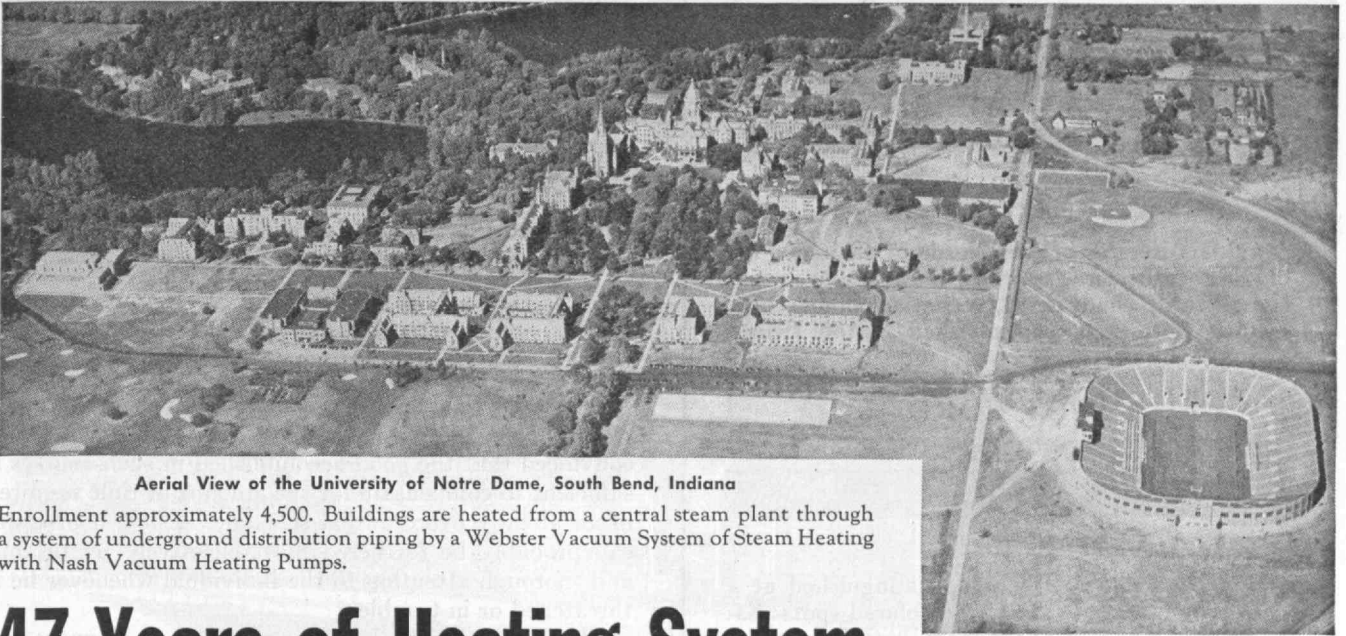
Up to the present time the Committee's recommendations for added space have not been carried out because of the present demands of many departments occasioned by

*(Concluded on page 482)*

\* Members of this Committee for 1946-1947 are: W. Cameron Forbes, chairman, Samuel C. Prescott, '94, Dr. W. Jason Mixer, '02, Dr. James H. Means, '06, Ellis W. Brewster, '13, Dr. Egon E. Kattwinkel, '23, Dr. T. Stewart Hamilton, and Laurence F. Whittemore. Committee members present at this meeting included: Messrs. Forbes, Prescott, Mixer, Means, Kattwinkel, Hamilton, and Whittemore. Mr. Brewster was absent. Also present were: Dr. Dana L. Farnsworth, Medical Director; Dr. George W. Morse, Medical Director, Emeritus; Dr. John W. Chamberlain, '28, Assistant Medical Director; Karl T. Compton, President of M.I.T.; Horace S. Ford, Treasurer of M.I.T.; and Mr. Forbes's secretary, Lytton H. Dowson, who acted as secretary of the meeting. The group was joined at luncheon in the Silver Room of Walker Memorial by Dr. Walter O. Blanchard, Assistant to the Medical Director.

"This is a story of the heating at Notre Dame University. A similar story might be told of the excellent management of the heating installation in the Institute's great buildings. It's been a Webster Vacuum System from the beginning."

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Aerial View of the University of Notre Dame, South Bend, Indiana

Enrollment approximately 4,500. Buildings are heated from a central steam plant through a system of underground distribution piping by a Webster Vacuum System of Steam Heating with Nash Vacuum Heating Pumps.

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## MAINTAINING STUDENT HEALTH AT M.I.T.

(Concluded from page 480)

the large increase in enrollment. Until more room is available, the Department cannot expand its facilities. When five or six additional rooms are secured, the staff should be able to give maximum service under nearly ideal conditions for many years. There would have to be very unusual conditions indeed to call for any further major increase in space requirements for the Department.

The possibility of establishing a permanent chest x-ray program was discussed, and it was unanimously voted to recommend that it shall be made obligatory for all students, both full and part-time, to have chest x-rays taken annually.

### Health Education Center

In many colleges formal courses in hygiene are given to freshmen. At the present time the Department is not convinced that the good accomplished in such courses is sufficient to compensate for the amount of time required in an already overcrowded schedule. A health program can probably be furthered most effectively by prompt and thorough attention to the individual whenever he is threatened or in trouble.

The aim of the Medical Department is to diagnose and treat the illnesses that occur in the Institute family, to prevent disease in any manner possible, to act in a medical advisory capacity in a wide range of health and personal problems, and to be an educational center for the Institute so far as health matters are concerned. To carry out these aims a staff has been assembled which co-operates in much the same manner as would a group clinic under private auspices. The staff endeavors to carry out its work in a personal, quiet, and dignified manner with the highest of professional standards in mind. By so doing the Department hopes to earn its right to vigorous support and co-operation from all members of the Institute.

## THE SCIENTIFIC WAY

(Continued from page 464)

Even so, a mere moment's glance into the history of science is enough to disabuse us of the notion that practical application is the prime motive of research, or that a research is begun only when a clear objective has been defined in terms of a specific theory, technique, or application to be achieved. In general, the knowledge out of which some practical advantage or benefit grows has itself been long in existence before the application is made — and this is true in general, even in our own time of skill in applied research for a definite purpose. Often, moreover, new knowledge comes to light at a time and in a way having no relation whatever to possible applications. Practical usefulness is good, of course. For demonstration of that, all we have to do is look at the long curve of history where the trend, in spite of many aberrations and fluctuations such as those that indicate the troubled spots and unsettled problems of today, has been steadily toward an easier and richer life for the ordinary human being. In

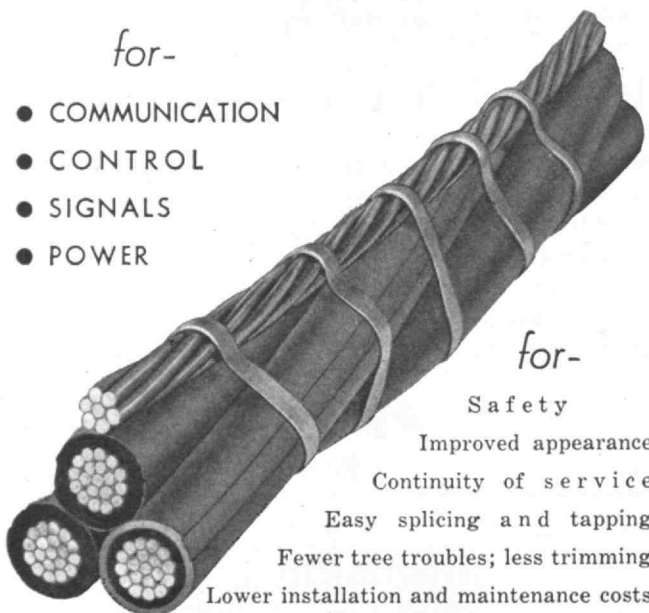
(Continued on page 484)

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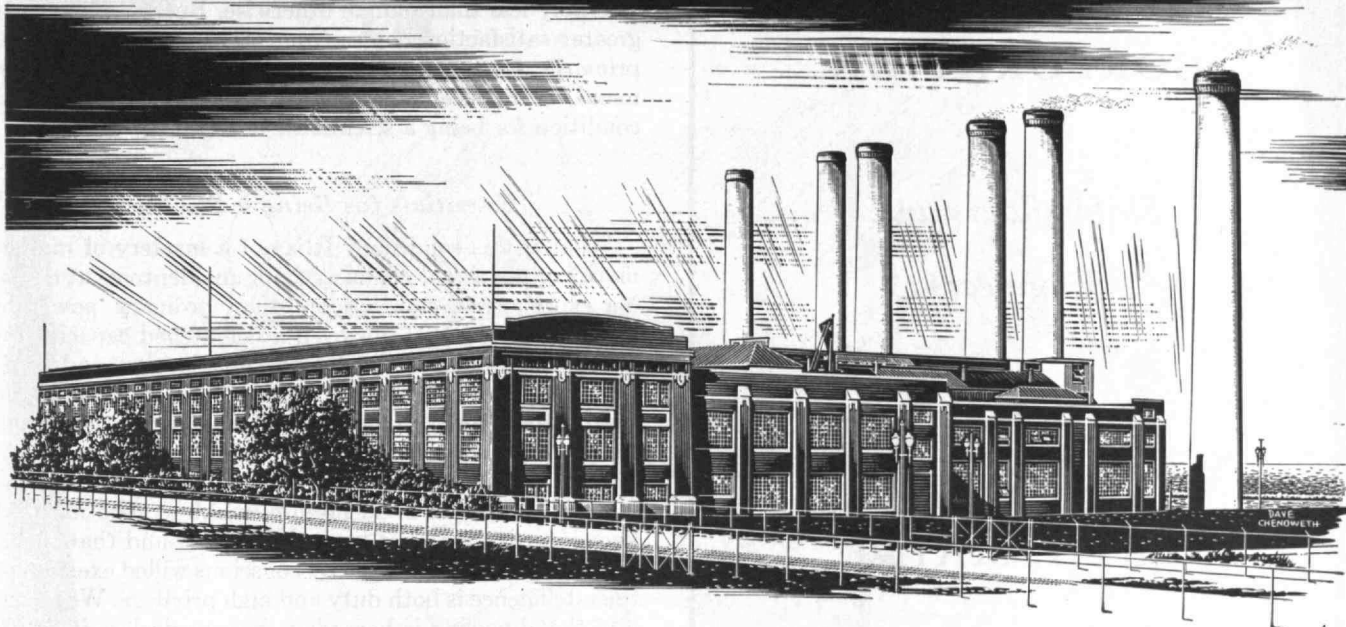
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But Lakeside more than vindicated its designers. Not only did it prove the practicability of pulverized fuel; it demonstrated its economy in the most

convincing way possible, by establishing the lowest BTU rate (the measure of power station efficiency) of any station in the country. Combustion Engineering supplied the pulverized fuel grinding and burning equipment for the initial installation at Lakeside and, for the later extensions to the station, the steam generating equipment as well.

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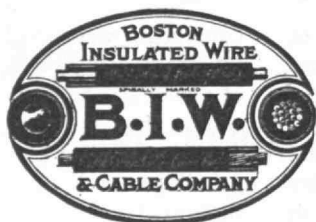
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## THE SCIENTIFIC WAY

*(Continued from page 482)*

the minds of the generality, practical usefulness, then, is naturally enough the greatest justification for science. To scientists themselves, it is satisfying to see that the general welfare is aided by practical applications of the knowledge which they accumulate. They would be considerably less than human otherwise. But I believe their greater satisfaction comes from other sources. It comes primarily from being able and enabled to fulfill the demand, or requirement, or faith, which is the essential condition for being a scientist.

### *Essentials for Being a Scientist*

What is this condition? It is not a mastery of mathematics or physics or chemistry, nor an adeptness at devising experiments, nor a more than ordinary power of logical analysis. It is not even a heightened capacity for the rare combining of intelligence, imagination, and intuition in the act of creative thought which constructs the great hypotheses and syntheses. The essential condition is not the possession or the exercise of any of these attributes, though each is a great value in itself. Rather, the essential condition is an intense, innate conviction that knowledge is good, that knowing is good, and that therefore to increase knowledge by conscious willed exertion of the intelligence is both duty and high privilege. We recognize that knowing is hazardous but we declare it worth the risk. To follow the scientific way is thus a profession of the faith that, as we know the truth, the truth will make us free. Here our distinction of motives or incentives becomes clearly set out. As knowledge contributes to the general welfare, whether through applied science, engineering, or some other avenue, it is a good in immediate or pragmatic senses. In the sense of the essential condition, however, of the scientific way, knowledge is good in and of itself, without regard to such immediate or pragmatic benefit as it may offer.

Now if we regard knowledge thus highly as a good, absolute in itself, we comprehend that knowledge has an integral quality. We comprehend that it has a virtue, that it has an inherent right to our respect for its integrity. The man to whom this recognition has come is therefore humble before knowledge. He will not trespass upon it, but he will rather accede to knowledge, seek to understand it, and to participate in it. Therefore he strives for objective, selfless honesty in approach, in definition, in operation. Here in this objectivity of attitude, far more than any set of working procedures, is the reason for the essential unity of the various scientific disciplines, whether in nuclear physics or in classical philology.

We come each to our own comprehension of the individual human intelligence confronted by the vast mass of knowledge. The contrast is great, so great that the attainment of a thorough grasp in a lifetime seems impossible on the face of it. Yet we know that a working relationship is attained, and we must recognize this as one of the two or three most amazing and humbling facts. We come each to that comprehension only slowly at best, with many false starts and departures from the true course. History in general, and the history of one's own discipline in particular, are of profound worth in this search, in great

*(Concluded on page 486)*

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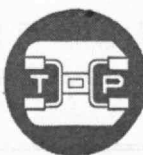
The design and production of a new type of glass-blowing machine to produce another bottle, a small piece of druggist's ware, had to be "boarded out" from its home plant during its development, in order to keep it secret until ready for market. So the bottle-maker's chief engineer and his staff spent several months completely incognito in the Taft-Peirce plant, in drafting rooms specially set aside for them here. And there was no "leak" in that bottle. The job stayed under wraps at

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## THE SCIENTIFIC WAY

(Concluded from page 484)

measure because through reciting the courses which others followed history may safeguard us against pitfalls which they discovered. The aim toward which the student of science perseveres is that of ultimately doing original investigation, exploring the unknown. Just as in preparing for this he repeats classical experiments in his studies, so in working toward his philosophy of science, that is, his comprehension of the relationship between himself and knowledge, he is wise to review classical experiences.

Students of science see their own projects state unequivocally one of the great and hard lessons which all travelers along that way must learn — the lesson that in research, in the exploration of the unknown, the price of one success is often many failures. Therefore, the effort and ability to detect failure and error early, and the capacity and strength to abandon a line of approach however treasured and however far committed, once its fruitlessness is sensed, are vital elements in the complex compound of plan, reason, patience, and courage out of which new knowledge is precipitated. The great quality is not simply to be able to stand up under disappointments, but to be able to do so without losing the zest and exhilaration that should attend success. The fascination and the compulsion of the characteristic quality of science are that a discovery made or a question answered, reveals new unknowns to seek and new questions to ponder.

Before us is the great and heartening awareness of another truth which is closely akin to this last, and which lies at the vitalizing center of man's existence as a sentient being. Science is a regenerative system. So is the combined act of will and intellect which the scientific way calls forth. By effort of the will, the intellect is exercised. That exercise, in turn, renews the effort of the will, and so the cycle is repeated again, opening one of the deepest satisfactions man can know. To some who elect to follow the scientific way, success, in the world's terms, will be attainable, and there will be satisfaction in it. To all, there will come as there must, reverses, setbacks, disappointments — in the world's terms. These are temporal and do not matter. What does matter is the achievement of that serenity, equanimity, and balance which come from certainty concerning what men do and who they are as creators — and creations — of this conjoint, self-replenishing, and inexhaustible power that resides in will and intellect.

## MAN AS A GEOLOGICAL FORCE

(Continued from page 471)

est scourges that ever hit the European woodlands was the blast furnace, invented in the Fifteenth Century. Because these were run originally on charcoal, the drain on timber reserves became so heavy that in Great Britain the parliament passed a series of acts between 1558 and 1584 designed to limit the regions in which iron works could operate. The legislators feared for the supply of ship-building lumber. Except when war forces the suspension of such reasonable measures, an increasing number of forests in Europe and America are being maintained on a sustaining basis. Indicative of the extent to which the pendulum has swung is the fact that British North Borneo had a conservator of forests.

Wherever the natural cover is stripped away and the climate is subarid or slopes are steep, the topsoil starts to move. There appears to be little doubt that man and his livestock have helped to enlarge desert areas and have increased the intensity and number of dust storms. Iran, Syria, Greece, Italy, and much of North Africa, not to mention a good many areas closer to home, are regions where once fertile land has become barren through the efforts of men and their animals to stay alive. On the other hand, terraces to hold the soil on steep slopes were a feature of agriculture in pre-Christian Palestine, in China, the Philippines, and throughout the ancient civilizations of Central and South America. Bennett estimates<sup>11</sup> that the walled terraces of the Incas represented an investment of about \$18,000 per acre in terms of modern labor costs.

One interesting example of man's interference with natural processes that should be called soil creation, rather than soil conservation, is occurring in Honduras in the valley of the Ulua River.<sup>12</sup> Like many other rivers loaded with silt, it tends to build up its own bed above the level of the valley. As the result of reoccurring floods, large swamp areas have formed. Because the soil and climate of this valley are ideal for the growing of bananas, a full-scale engineering approach, involving heavy equipment and large expenditures, was made to reclaim these swamps. By controlling the areas that are flooded and the velocity of the flow, the river has been made to deposit its

(Continued on page 488)

<sup>11</sup> Hugh H. Bennett, *Soil Conservation*, page vi (New York: McGraw-Hill Book Company, Inc., 1939).

<sup>12</sup> *The Scientific Monthly*, February, 1946, page 117 ff.

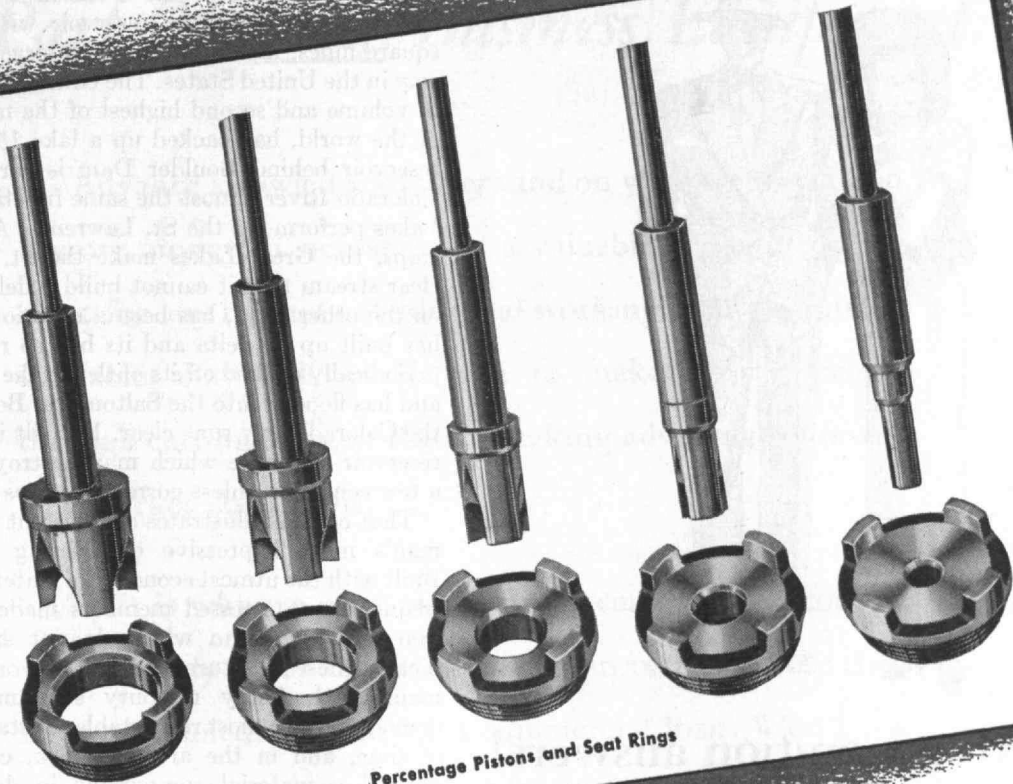
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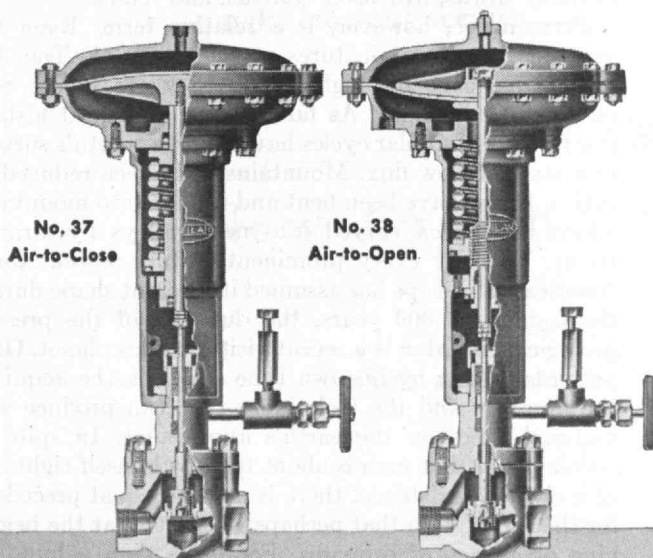
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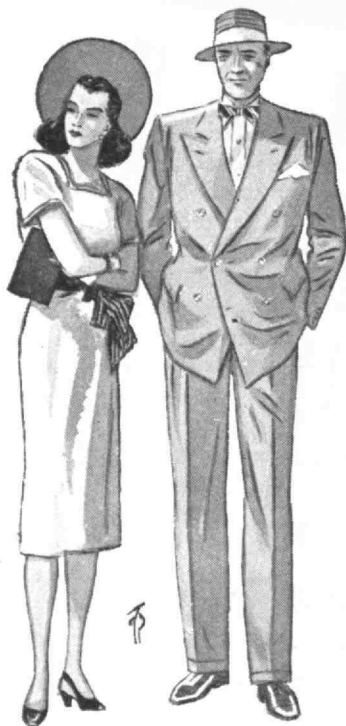
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## MAN AS A GEOLOGICAL FORCE

*(Concluded from page 486)*

silt as desired. Up to World War II more than 15,000 acres had been built up by controlled sedimentation, and 100,000 acres are available for further treatment. The average rate of deposition is about three inches per year.

Tinkering with geography, at least on a minor scale, is getting to be a fairly frequent consequence of engineering. The building of the Denison Dam in Texas, for example, has created a reservoir with an area of 220 square miles, making it the fifth largest artificial waterway in the United States. The Grand Coulee Dam, largest in volume and second highest of the masonry structures of the world, has backed up a lake 151 miles long. The reservoir behind Boulder Dam is carrying out for the Colorado River almost the same function that the Great Lakes perform for the St. Lawrence. Acting as huge silt traps, the Great Lakes make the St. Lawrence such a clear stream that it cannot build a delta. The Colorado, on the other hand, has been a notorious silt bearer, and has built up its delta and its bed so rapidly that it has periodically choked off its outlet to the Gulf of California and has flooded into the Salton Sea. Below Boulder Dam the Colorado now runs clear. But silt is deposited in the reservoir at a rate which may destroy its usefulness in a few centuries unless corrective steps are taken.

That outlook illustrates a persistent feature of some of man's most impressive engineering accomplishments. Built with the utmost economy of material and depending frequently on stressed members made of materials like iron and aluminum which do not exist in nature as metals, these structures can function only if continuously maintained. Many masonry structures have already demonstrated a most respectable resistance to the ravages of time, and in the artificial rock, concrete, man has created a material comparable in durability to most natural substances. But many of our bridges would collapse if subjected to but a few decades of neglect. A few centuries of neglect, and only traces would remain of many towns, irrigation systems, and roads.

Permanence, however, is a relative term. Even the greatest of natural features are not eternal. The Appalachians, once far higher than they are today, rose out of a shallow sea. As far back as geological history can be traced, similar cycles have kept the earth's surface in a state of slow flux. Mountains have been reduced to plains. Plains have been bent and broken into mountains which have been carved into new valleys by strange rivers. Virtually every prominent feature of the North American landscape has assumed its present shape during the last 50,000,000 years, the duration of the present geological era. Man is a recent visitor to this planet. Only yesterday, even by his own time scale, has he acquired the numbers and the techniques that can produce any material effect on the earth's appearance. In spite of current fears that man is about to hoist himself right out of a civilized existence, there is at least equal precedent for the speculation that perhaps we are still at the beginning of an age of primates. For more than a hundred million years life at its highest, most involved form, was represented by the trilobites. The age of reptiles endured for almost as long a period. At his current rate of progress, if that is the word, man needs only a fraction of that time to reshape the world.

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(Continued from page 468)

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acquaintance with some of the great masterpieces of literature and an understanding of their setting in, and influence upon, civilization. There must be developed the moral, ethical, and social concepts essential to a satisfying personal philosophy, to a career consistent with the public welfare, and to a sound professional attitude. Finally, the program has as its purpose the attainment of an interest and pleasure in educational and cultural pursuits which thus serve as an inspiration to continued study.

The list is interesting as an indication of what the modern engineer expects of the humanist and social scientist. Any group of teachers who could accomplish so much would certainly be supermen. For most of us, however, the results achieved will be less than the desired goal. The adoption of clearly defined objectives, even if somewhat more limited than the ideal, will assist in achieving the ultimate objective in engineering education.<sup>5</sup>

### [The Quest for Literacy

The first of these, and the single thread which runs through any effective program, is the quest for literacy, that is, the ability to listen, to read, to speak, and to write. It is not implied that literacy, even in this larger sense, spells ability. A man may be able, even though in many fields he may be illiterate. Possibly, even the converse is true; that a stupid person is perchance literate. When, however, one recent survey shows that 40 per cent of the persons questioned believed that the United States was an active member of the League of Nations, or when another assigns to American college graduates an effective vocabulary of 1,000 words, it is obvious that the modest objective of literacy, as defined above, is not to be despised. After all, whether in war, love, or ordinary intercourse, words are swift as arrows and strong as swords. In a democracy, they are essential to leadership, as witness Winston Churchill.

Fortunately, at every level, literacy is one of the arts which can be taught. Obviously, too, it is of practical importance to the engineer who must not only find his problem, and solve it, but also sell the solution to other men.

There is also time to introduce the engineer to history. For our purpose, the important thing is a sense of perspective which comes of studying the past, and a realization that the world was not created in the year 1900. These

(Continued on page 492)

<sup>5</sup>H. P. Hammond, et al., "Report of Committee on Engineering Education after the War," *Journal of Engineering Education*, 34:589-614, (May, 1944).

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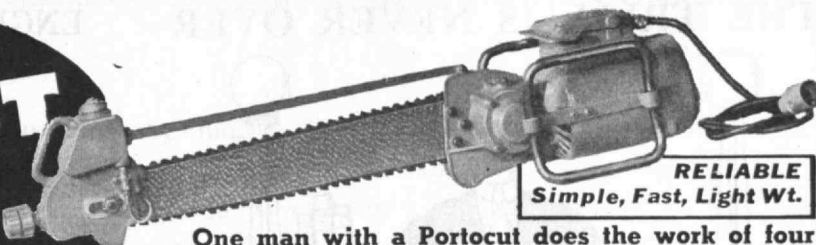
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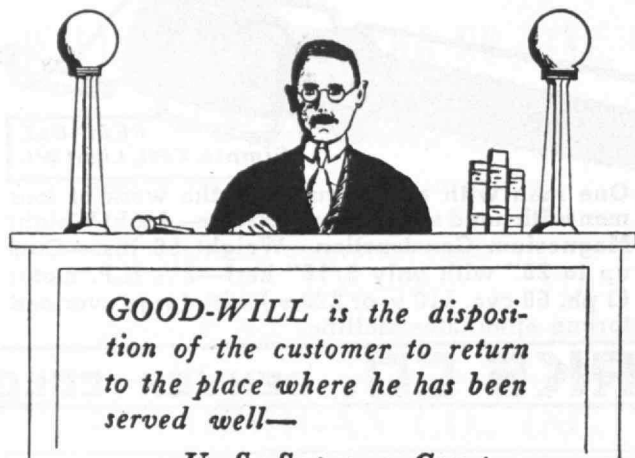
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# ENGINEERING AND EDUCATION

*(Continued from page 490)*

aims may be achieved either by a survey centering around some common theme, such as the history of civilization, or, preferably, by the more intimate study of single vital periods.

Here it is especially important that the end results be kept in view. In all ages history is the basis of statesmanship, and in a democracy all men are statesmen to some extent at least. In devising the means and physical instrumentalities which determine our mode of living, the engineer plays a much greater role as statesman than other citizens. The quotation from Disraeli, "Statesmanship is the ability to discern the possible," needs to be balanced by that fine phrase of Talleyrand, "The statesman always carries the future in his heart."

In the study of history, it is by no means impossible to develop interests and a sense of proportion which are of enduring value. Thomas Fuller said long ago: "History maketh a young man to be old, without either wrinkles or grey hairs, privileging him with the experience of age, without either the infirmities or inconveniences thereof. For learning endueth men's minds with a true sense of the frailty of their person, the casualty of their fortunes and the dignity of their soul and vocation." But the study of history also has its purely utilitarian aspects as well. If George Santayana was even partly right when he said, in *The Life of Reason*,<sup>6</sup> "Those who cannot remember the past are condemned to repeat it," then neglect of the past is surely dangerous.

Among the social sciences a choice must be made. The engineer's professional interests make economics essential. Psychology, especially the psychology of groups, also appears to be a field which can be studied with advantage in engineering colleges.

### *Developing a Professional Outlook*

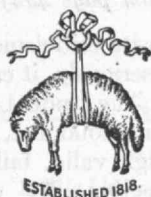
For thousands of young engineers the last period of formal education comes in their senior year. In many engineering colleges, the fourth year is one which provides specialized electives and, in some cases, during which the student prepares a substantial thesis based on his own reading and research. It seems natural that the student, who will soon begin the practice of his profession, should also have a reasonable choice of subjects on the humanistic side of his education during his last year of formal academic training.

One program, already in effect at M.I.T., provides four senior electives: (a) International Relations; (b) History of Science and Thought; (c) The Fine Arts; and (d) Western World Literature. Many others might readily be suggested, but there are practical limits to what can be done with thoroughness and distinction. The first two have fairly close correlations with scientific and technical subjects. The fine arts lend themselves to the laboratory method where even the amateur may learn by doing, and the course in literature gives further opportunities in expression.

A program which aims to provide a certain background of the humanities and social sciences in a technical

*(Concluded on page 494)*

<sup>6</sup> New York: Charles Scribner's Sons, 1922.



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**ENGINEERING AND EDUCATION***(Concluded from page 492)*

course is subject to two opposite criticisms. It leaves out much, as is inevitable. More seriously, it carries no single subject to an advanced level. The student who graduates is neither a historian, nor an economist, nor a literary critic. Such criticism, although valid, fails to recognize the broad humanistic objective. By definition and necessity, the student for whom we are planning is at least a potential scientist or engineer, to whom such courses in the liberal arts and the humanities, if well given by inspiring teachers, may offer illumination and reveal unsuspected relations.

For an experiment in general education of such obvious importance, the engineering colleges have both advantages and disadvantages. The chief disadvantage is not, as is sometimes assumed, any lack of interest among faculty, alumni, or students. The popularity, in at least one engineering college, of fairly intensive courses, of such subjects as modern philosophy and the history of science, is ample proof that interest is not lacking. The lack of time is a real difficulty, and this is being overcome, to some degree, by increasing emphasis on graduate studies.

There are, however, correlative advantages. The humanist and the historian are entirely unhampered by sharp divisions between and within departments. No faculty is so little likely to be misled by premature and, as it seems to me, illusory attempts at synthesis. Above all, there is a climate which allows experiment and change without the binding hand of vested academic interests.

At least 16 of the major engineering colleges are planning in different ways, but with similar objectives, co-ordinated programs in the social sciences and humanities. The educational results are well worth watching.<sup>7</sup>

<sup>7</sup> H. P. Hammond, "Report on Humanistic Social Studies in Engineering Education: Introduction"; Robert M. Boarts and John C. Hodges, "The Characteristics of the Humanistic-Social Studies in Engineering Education: A Report," *Journal of Engineering Education*, January, 1946, pages 338-351.

At M.I.T., the Division of Humanities is responsible for a four-year program in the Humanities and Social Sciences, required of all students, outlined in the catalogue on page 125.

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Through the Alumni Fund you have already been of real help. Your continued participation is important in the Institute's over-all fundraising program. You may be able, however, to contribute in even greater degree, either directly or by calling the attention of nonalumni to the Institute's needs. Working together, Alumni, staff, and friends can assure a continuance of this institution in that position of strength which is so important to our national welfare, in peace as in war.



# TECHNOLOGY MEN IN ACTION

## M.I.T. MEN AT WAR

Listed below are 229 names of those M.I.T. Alumni who gave their lives while in the military service of the United States and its Allies. The Review Editors regretfully published additional names from time to time as information pertaining to these men became available.

If any of our readers have additional data regarding the men whose names are published herewith or regarding other Alumni not listed who lost their lives in World War II, we urge that they send us this information to complete our records.

### U.S.A.

- 1904 \*Bakewell, Joseph Hunter, *C.W.O.* — Italy, February 7, 1945.
- 1907 \*Godfrey, Stuart Chapin, *Brig. Gen.* — plane crash, Spokane, Wash., October 20, 1945.
- \*Van Keuren, Henry Phillip Tappan, *Capt.* — Washington, D. C., January 10, 1942.
- \*Wilkins, Harold Street, *Col.* — Southampton, L. I., June 16, 1946.
- 1912 \*Morrill, Carl Henry, *Capt.* — Boston, Mass., October 13, 1942.
- 1913 \*Means, Alan Hay, *Col.* — June 15, 1946.
- 1916 \*De Merritt, Robert Elwyn, *Col.* — Camp Davis, N. C., July 25, 1942.
- \*Harms, Henry William, *Brig. Gen.* — Riverside, Calif., June 4, 1945.
- \*Hyde, James Francis Clark, *Brig. Gen.* — United States, August 7, 1944.
- 1917 \*Barry, Edwin Fry, *Col.* — malaria, while Japanese prisoner on Luzon, June, 1942.
- \*Conaty, Francis Sylvester, *Lt. Col.* — on Japanese prison ship bombed on way from Philippines to Japan, December 15, 1944.
- \*Correll, Edgar Staley, *Col.* — March 4, 1945.
- \*Robinson, Clark, *Maj.* — plane crash, near Burma frontier, December 18, 1943.
- 1918 \*McVickar, Lansing, *Col.* — Luxembourg, January 14, 1945.
- \*Parkinson, Donald Berthold, *Maj.* — November 17, 1945.
- 1919 \*MacKirdy, Howard Spencer, *Col.* — Washington, D. C., November 26, 1943.
- \*Morrison, Robert Fletcher, *Lt. Col.* — New York, October 16, 1943.
- 1920 \*Sanger, Donald Bridgman, *Col.* — California, February 10, 1947.
- 1921 \*Lyon, Alfred Jefferson, *Maj.* — Washington, D. C.
- \*Newcomer, David Albert, *Col.* — southern France, August 25, 1944.
- \*Starck, Carl William, *1st Lt.* — February 28, 1945.
- 1922 \*Damon, Roger Henderson, *Maj.* — Germany, January 25, 1946.
- \*Gallagher, Ernest Francis, *Capt.* — Virginia, June 2, 1944.
- 1923 \*Englehart, Alva Franklin, *Col.* — San Francisco, Calif., April 15, 1945.
- 1924 \*Brimberg, Isaac, *Maj.* — Mobile, Ala.
- 1925 \*Franks, John Brandon, *Brig. Gen.* — November 13, 1946.
- \*Mize, Charles Roderick, *Capt.* — Manila, June 2, 1943.
- \*Parkinson, Roger Wendell, *Lt. Col.* — Holland, September 26, 1944.
- \*Pierce, Herbert Ralph, *Lt. Col.* — illness contracted in China, October 30, 1945.
- 1926 \*Fine, Francis Gurney, Jr., *Capt.* — Santa Barbara, Calif., May 4, 1943.
- 1927 \*Cuthbertson, Harry Buchanan, *Lt. Col.* — Paris, December 12, 1945.
- \*Gerst, George Samuel, *Lt.* — on mission between Bougainville and Guadalcanal, May 19, 1943.
- 1928 \*Petrie, Malcolm Oliver, *Capt.* — prisoner of the Japanese.
- 1929 \*Jacob, Perry Hammond, *Capt.* — illness contracted on Leyte, April 25, 1945.
- 1930 \*Cofran, Everett Smith, *Maj.* — Europe, result of fire.
- \*Payson, Oleott Sprigg, *Lt.* — June 17, 1942.
- \*Peoples, Ulysses John Lincoln, Jr., *Lt. Col.* — Japanese prison ship torpedoed, December 15, 1944.
- \*Williams, Randolph Piersol, *Col.* — France, September 5, 1944.
- 1931 \*Allen, William Irwin, *Col.* — December 28, 1943.
- 1932 \*Allee, Edward Schwartz, *Col.* — plane crash near West Palm Beach, Fla., May 31, 1944.
- \*Crocker, Otis Waite, *Capt.* — April 27, 1945.
- \*Parks, Gordon Keith, *Lt. Col.* — south Pacific area, October 8, 1943.
- 1933 \*Carle, Earl Richards, *Capt.* — cerebral malaria, April 26, 1942 (following Bataan Death March).
- \*Case, Charles Vincent, Jr., *Lt.* — Italy, May 31, 1944.
- \*Harper, Thomas, Jr., *Sgt.* — near Manila, April 3, 1945.
- \*Latimer, William James, *Maj.* — prisoner of the Japanese, January 23, 1945.
- \*Mitchell, Floyd Allen, *Lt. Col.* — Philippines, prisoner of war, December 15, 1944.
- 1934 \*Battitt, Beshara Elian, *Lt.* — France, October 11, 1944.
- \*Castle, Robert Dix — Germany, December 1, 1944.
- \*Emery, Robert MacNab, *Lt.* — Africa, November 8, 1942.
- \*Parker, Frank Claveloux, Jr., *Maj.* — over New Guinea, November 25, 1942.
- 1935 \*Bodell, Brandon Brewster, *Lt.* — France, September 28, 1944.
- \*Dove, Paul Whitney, *Capt.* — prison ship torpedoed, September 7, 1944.
- \*Pagliuca, Salvatore, *Maj.* — North Carolina, April 30, 1944.
- \*Trescher, William, *Lt.* — Germany, November 12, 1944.
- \*Yepsen, William Grundtvig, *Lt.* — December 20, 1944.
- 1936 \*Bosworth, Lawrence Arthur, *Maj.* — Japanese prison ship sunk, December 15, 1945.
- \*Gardiner, John Dick, *Capt.* — Washington, D. C., September 30, 1942.
- \*Gates, Clayton Samuel, *Lt. Col.* — Virginia, March 4, 1944.
- \*Knight, Edmund Clark, *Capt.* — France, December 9, 1944.
- \*Robinson, William Hurlin, *Pvt.* — Belgium, January 8, 1945.
- \*Steinhurst, William Arnold, *Capt.* — plane crash, France, November 1, 1944.
- \*Williams, Robert Erskine, Jr., *Maj.* — plane crash, Wright Field, January 15, 1944.
- 1937 \*Bartlett, David Bradt, *1st Lt.* — prison ship torpedoed, Philippine area, September 7, 1944.
- \*Breitling, George Thaddeus, *Lt.* — on prison ship while being transferred from Philippines to Japan, December 15, 1944.
- \*Clark, Lincoln Romeiser, Jr., *Lt.* — on prison ship, Subic Bay, December 15, 1945.
- \*Gander, John Henry, *Maj.* — October 10, 1943.
- \*Haggerty, Robert Foster, *Maj.* — on prison ship, December 15, 1944.
- \*Laus, André Nicol, *Capt.* — France, August 29, 1944.
- \*Strauten, Robert, *T.5.* — Germany, March 2, 1945.
- \*Walsh, Edward Clark, *1st Lt.* — over Germany, December 16, 1943.
- \*Wirtz, Elmer Clarence, *Capt.* — Cabanatuan prison camp, Japan, cerebral malaria, 1942.
- 1938 \*Eakin, John Hitt, *Lt.* — Farmingdale, N. Y., plane crash, February 6, 1941.
- \*Guttel, John, *Lt.* — was missing in action since August 21, 1943. War Department has put date of death as January 12, 1946.
- \*Mills, Charles Robert, *Capt.* — North African area, July 28, 1943.
- \*Paige, Walter Hale, Jr., *Pfc.* — France, August 1, 1944.
- \*Spengler, Daniel Stickley, *Capt.* — Normandy, July 8, 1944.
- \*Thau, William, *Capt.* — February 14, 1943.
- \*Topalian, James Malcolm, *Corp.* — Pearl Harbor, December 7, 1941.
- 1939 \*Hall, Leigh Spaulding, Jr., *Lt.* — plane crash, Dayton, Ohio, October 30, 1944.
- \*Jackson, John West, *Lt.* — Florida, July 30, 1942.
- \*Merrill, Leonard Abbott, Jr., *Lt.* — Anzio beachhead, January 26, 1944.
- \*Putnam, Henry Ware, *Capt.* — over Tokyo, May 24, 1945.
- \*Scheidt, Frederick Emil, *Corp.* — Germany, April 1, 1945.
- 1940 \*Bernd, Peter Paul, *Capt.* — South China Sea, prison ship sunk, October 24, 1944.
- \*Crimmins, Francis Joseph, *1st Lt.* — Holland, September 15, 1944.
- \*Hurley, Henry Wright, *Lt. Col.* — Sicily, July 14, 1943.
- \*Johnson, Malcolm Edward, *Lt.* — France, June 14, 1944.
- \*Little, Augustine Patterson, Jr., *Capt.* — France, August 29, 1944.
- \*Nash, Lloyd Williams, *Maj.* — Belgium, December 24, 1944.
- \*Smith, George Rosse, *Lt. Col.* — plane crash, New Jersey, July 31, 1942.
- \*Swift, Dean Edwin, *Col.* — Manila, January 7, 1946.
- \*Teich, Lawrence Edward, *Lt.* — was missing since fall of Corregidor, May 7, 1942.
- \*van Schaick, John, *Sgt.* — January 19, 1945.
- 1941 \*Adelson, Horace Jonas, *Lt.* — plane crash, Wright Field, Dayton, Ohio, July 9, 1943.
- \*Atwater, Charney Kemper, *Lt.* — Sardinia, March 19, 1944.
- \*Bird, John Russell, *Capt.* — plane accident, presumably Hawaiian Islands, October 31, 1942.
- \*Branham, Hugh Marshall, *Lt.* — plane crash, Guam, November 7, 1945.
- \*Campbell, Thomas Colin, Jr., *Capt.* — October 21, 1944.
- \*Cooke, James Henry, *Lt.* — Osaki, Japan, prisoner of war, 1943.
- \*Doughten, William Simpson, Jr., *Lt.* — Sicily, July 10, 1943.
- \*Heist, John Cameron, *Maj.* — France, September 2, 1944.
- \*Jerome, Frank Jay, 3d, *Lt.* — Pacific.
- \*Nagle, John Joseph, 3d, *Capt.* — New Guinea, April 29, 1944.
- \*Reeves, Milton Clark, *Lt.* — was missing since November 23, 1943, Italian theatre of war.

- ★Shepard, William Milson, *Capt.* — Italy, April 15, 1945.
- ★Van Tuyl, Richard Albert, *Lt.* — Austria, December 28, 1944.
- ★Wiener, Richard Sampson, *Lt.* — Italy, January 10, 1944.
- 1942 ★Bardwell, Allan Ralph, *1st Lt.* — plane crash, southwest Pacific, July 17, 1943.
- ★Costello, Francis Michael, Jr., *Lt.* — plane crash, Indiana, May 17, 1943.
- ★Downing, James Francis, *Capt.* — plane crash, September 10, 1943.
- ★Herman, Bradford Kent, *Lt.* — plane crash, Texas, April 19, 1943.
- ★Kelley, Charles Francis, Jr., *Capt.* — Tunisia, March 9, 1943.
- ★Kunz, Robert Calvin, *Maj.* — near Hanchung, China, June 19, 1945.
- ★McHarg, William Carmen, *Lt.* — Bainbridge, Ga., October 22, 1943.
- ★Penn, Leo Hersch, *Capt.* — plane crash, northern Honshu, September 30, 1945.
- ★Pflueger, James William, *1st Lt.* — Africa, November 9, 1942.
- ★Reed, Harold MacGregor, *Lt.* — Europe, February 16, 1944.
- ★Root, John David, *Capt.* — northwestern France, June 8, 1944.
- ★Traupe, William Frederick, *Capt.* — Germany, February 20, 1945.
- ★Young, James Howard, Jr., *Lt.* — Ft. Worth, Texas, July 4, 1943.
- 1943 ★Fleming, Lamar, *3d Lt.* — Europe, December 27, 1944.
- ★Graham, Everett John, Jr., *Lt.* — Leyte, October 20, 1944.
- ★Jenkins, Cornelius Allen — Germany, February 4, 1943.
- ★Smith, Gustavus Hindman Miller, *2d Lt.* — France, October 8, 1944.
- ★Spear, Ernest Mills, *Lt.* — Saipan, November 8, 1944.
- 2-44 ★Manson, Wallace James, *2d Lt.* — Laon, France, October 7, 1945.
- ★Nelson, Paul Gustaf, *2d Lt.* — Belgium, January 5, 1945.
- ★Schutte, George Arthur, *Lt.* — Luxembourg, February 12, 1945.
- ★Shepard, Henry Crawford, *2d Lt.* — plane crash, Kunming, China, September 18, 1944.
- 10-44 ★Bresler, Richard Herbert, *Lt.* — plane crash, India, July 8, 1945.
- ★Burke, James Cyril, Jr., *2d Lt.* — plane crash, Nebraska, August 3, 1944.
- ★Freund, Walter Joseph, Jr., *Sgt.* — Belgium, January 7, 1945.
- ★Hann, Vincent Robert, *Pfc.* — France, October 29, 1944.
- ★Herb, John William, *Lt.* — Germany, April 13, 1945.
- ★Hyde, William Benton, *2d Lt.* — February 11, 1945.
- ★Kelley, James Edward, *Pvt.*
- ★Seghers, Paul Dotreng, Jr., *Lt.* — China, July 11, 1945.
- ★Solow, Robert Julian, *Pvt.* — France, February 4, 1945.
- 6-45 ★Clement, Robert Carroll, *2d Lt.* — September 19, 1944.
- ★Dixon, Robert Edward, *2d Lt.* — plane crash, England, October 15, 1944.
- ★Frye, John Randall, *Pvt.* — plane crash, July 20, 1946.
- ★Harris, Leon Francis, *2d Lt.* — England, November 5, 1944.
- ★Hunt, Donald Mulford, *2d Lt.* — France, December 7, 1944.
- ★Jackman, Waldo Clark, Jr., *Corp.* — ship collision on way overseas — Atlantic, March 13, 1944.
- ★Klafstad, Erling, Jr. — Scott Field, Ill., May 6, 1943.
- ★Lisk, Norman Edgar, Jr., *Lt.* — July 22, 1944.
- ★Mack, Leon Meyer, *Pvt.* — Belgium, January 2, 1945.

- ★Reeves, Willis Ward, Jr., *Lt.* — France, June 19, 1944.
- ★Robinson, William Rae, *Pvt.* — January 20, 1945.
- ★Skinner, Charles Van Arsdale, *Pvt.* — Germany, March, 1945.
- ★Vestal, Charles, *Lt.* — New Guinea, March 23, 1945.
- ★Wardwell, Theodore Maxwell, Jr., *Pfc.* — November 1, 1944.
- 2-46 ★Baker, William Church — France, December 6, 1944.
- ★Conlin, Joseph Anthony, *Pfc.* — January 23, 1945.
- ★Goodman, Edmund Greene, *T.4.* — illness contracted in Philippines, April 15, 1946.
- ★Horne, Frank William, Jr., *Pfc.* — of wounds received in Germany, April 14, 1945.
- ★Johnson, Russell Willett — France, April 14, 1945.
- ★Karno, Tobias Arthur, Jr., *Pfc.* — Germany, May 10, 1945.
- ★Newbury, David Merwin, *Pvt.* — Germany, November 25, 1944.
- ★Severson, Robert Duncan, *Pfc.* — Germany, March 16, 1945.

## U.S.N.

- 1901 ★Whitman, Ralph, *Rear Adm.* — Danbury, Conn., February 3, 1946.
- 1905 ★Nicholson, Dow Hiram, *Comdr.* — Philadelphia, Penn., March 19, 1945.
- 1908 ★Ferris, Raymond West, *Lt. Comdr.* — Newport, R. I., March 3, 1945.
- ★Fretz, Paul Henry, *Comdr.*, Oakland, Calif., November 24, 1943.
- 1916 ★Webster, Walter Wynne, *Capt.* — March 16, 1943.
- 1917 ★O'Brien, Thomas Francis, *Capt.* — Japanese prison camp.
- 1921 ★Healy, Howard Raymond, *Lt. Comdr.* — aircraft carrier *Lexington*, May, 1942.
- ★Raymond, Fred Luman, *Lt.* — on prisoner of war ship; was missing in Corregidor, December 15, 1944.
- 1922 ★Allen, Henry Converse, *Lt.* — Corona, Calif., June 16, 1946.
- 1923 ★Fleming, Robert Walton, *Capt.* — Luzon, January, 1945.
- ★Mullinnix, Henry Maston, *Rear Adm.* — Gilbert Islands, when escort carrier *Liscome Bay* was sunk, November 24, 1943.
- 1924 ★Royal, Forrest Betton, *Rear Adm.* — south Pacific, June 18, 1945.
- 1925 ★Kane, John Dandridge Henley, *Capt.* — southwest Pacific, June 13, 1944.
- ★McGinnis, Francis William, *Lt.* — plane crash, November 24, 1943.
- 1927 ★Shisko, Alexander George, *Lt.* — south Pacific, between January 9 and January 19, 1945.
- 1928 ★Estes, Norman Cornell, *Lt. Comdr.* — Hawaii
- 1929 ★Houck, William Gabriel, Jr., *Lt. (j.g.)* — Alaska, April, 1943.
- ★Kiefer, Dixie, *Commo.* — Mt. Beacon, N. Y., plane crash, November 11, 1945.
- 1932 ★Burr, Leland Mothershead, Jr., *Lt. Comdr.* — Pacific, January 17, 1945.
- 1934 ★Gibson, George Davis, *Lt. Comdr.* — western Pacific, September 10, 1944.
- ★Hubbard, Harry Ensor, *Comdr.* — southwest Pacific, October, 1942.
- ★Steele, Justus Underwood, *Lt. Comdr.* — plane crash, April 12, 1944.
- 1935 ★Garner, Howard Robert, *Lt.* — April 9, 1943.
- ★Lovett, George Joseph, Jr., *Lt.* — November 12, 1946.
- 1936 ★Black, Francis Loudon, *Comdr.* — January, 1943.
- ★Prescott, John Guthrie Foster, *Comdr.* — October 29, 1945.
- ★Waxman, Mark Murray, Jr., *Lt. (j.g.)* — plane crash, Minneapolis, Minn., December 17, 1943.
- 1937 ★Weschler, Charles John, *Lt.* — on Japanese prison ship, January 16, 1945.
- 1938 ★Dionne, Arthur Louis, *Ens.* — Solomon Islands, November 30, 1942.
- ★Gallagher, Robert Anthony, *Lt.* — Japanese prison ship.

- ★Lamb, Fred Lee, *Lt.* — Pacific area, November 8, 1943.
- ★White, William Thomas, *Yeoman* — missing from *Wahoo*, December 12, 1943.
- 1940 ★Downer, Delavan Bloodgood, Jr., *Ens.* — Kula Gulf, U.S.S. *Strong*, July 4, 1943.
- ★Fodale, Charles Benedict, *Lt. (j.g.)* — was aboard *Juneau*, November 13, 1942.
- ★Stone, George Roben, *Lt. Comdr.* — plane crash, near Boonville, Calif., January 21, 1943.
- 1941 ★Henry, Richard Kirk, Jr., *Ens.* — plane crash, near Vernalis, Calif., December 15, 1944.
- ★Logsdon, Thomas Mitchell, *Lt.* — was missing over New Guinea, date of death officially put as January 7, 1946.
- ★Seabury, Richard Hutchinson, *E.M.1c.* — Pacific area, July 7, 1945.
- ★Schaeffer, Richard Tague, *Lt.* — July 30, 1945
- ★Wade, Howard Winfield, *Lt.* — June 15, 1944.
- ★Whitman, Harry Gill, Jr., *Ens.* — Japanese prison ship, Subic Bay, December 15, 1944.
- 1942 ★Augusterfer, Donald William, *Ens.* — New Zealand, January 1, 1943.
- ★Dzendolet, Arthur, *Lt.* — November 28, 1942.
- ★Jones, Cutler, *Ens.* — Washington, D. C., November 26, 1942.
- ★Klopp, Harold James, *Ens.* — plane crash, Johnston Island, March 29, 1943.
- ★Leiserson, Charles Frederick, *Ens.* — plane crash, Westerly, R. I., September 20, 1943.
- ★Stamper, David Warren, *Lt.* — plane crash, Florida, May 16, 1943.
- 1943 ★Fenton, Douglas Grant, *Lt. (j.g.)* — Pacific, March 20, 1945.
- ★McGrath, Thomas Edward, *Ens.* — Pacific, January 29, 1944.
- ★Van Burgh, Lisle, *Lt. (j.g.)* — Formosa Straits, April 11, 1945.
- ★Wolf, Warren Frederick, *Lt. (j.g.)* — October 29, 1944.
- 2-44 ★Connett, Harold, Jr., *Ens.* — southwest Pacific, June 20, 1944.
- ★McClave, James Seabury, *Ens.* — Takoma, Wash., February 28, 1945.
- ★McKelvey, James Ruemmel, *Ens.* — off Marianas Islands, ship struck by Japanese suicide plane, June, 1945.
- ★Pritchard, Elbert Baker, *Ens.* — Pacific theatre of war.
- 6-45 ★Carr, Robert Sherwood, *Cadet* — plane crash, Pensacola, Fla., April 9, 1945.
- ★Hallick, Edward Alexander, *S.2c.* — November 10, 1944.
- 2-46 ★Katcher, Stanley Julian, *A.S.* — April 16, 1944.

## U.S.M.C.

- 1941 ★Ferguson, James Hollister, *3d, 1st Lt.* — plane crash, January 5, 1944.
- 10-44 ★Burke, John Francis, *2d Lt.* — Iwo Jima, April 4, 1945.

## CANADA

- 1939 ★McRoberts, Clare Arthur, *Flight Officer* — France, December 11, 1942.
- 1942 ★McNall, Burt Chester, *Sgt.* — November 10, 1942.
- ★Manders, Robert Emmett, Jr. — England, April 17, 1942.
- 1943 ★Mank, Matthew, *Sgt. Pilot* — Germany, April 15, 1943.
- 2-44 ★Vail, Derrick Tilton, *3d, Sgt.*, England, February 22, 1942.
- 10-44 ★Nightingale, William Edwin — Germany, March 8, 1945.

## ENGLAND

- 1935 ★Davies, Harold Francis Theophilus, *Lt.*, September 9, 1941.
- 1942 ★Shepard, Leonard Griffin, *Lt.* — China Sea May 12, 1944.

★ Killed in Action

\* Died or Killed in Service



## NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

*Acoustical Society of America*

The Society held its 33d meeting in the Hotel Pennsylvania in New York on May 8, 9, and 10. Papers given by Technology Alumni and staff included the following: "Measurement of Impedance to Sound in Water," by Richard D. Fay '17, R. L. Brown, and Ovide V. Fortier, Jr., '43; "Performance of the Anechoic Room in the Parmlly Laboratory," by H. C. Hardy, Franklin G. Tytzer '24, and H. H. Hall; "Construction and Calibration of an Improved Bone Conduction Receiver for Audiometry," by Richard W. Carlisle '26, Pierre R. Werner, and H. A. Pearson; "The Type 310-A Z-Angle Meter, a New Instrument for Electrical and Electroacoustic Measurements," by Lucius E. Packard '35; "Imagery in Describing Tone Quality," by Vincent Salmon '38; "Photo-Electronic Synthesis of Musical Tones," by Paul McK. Erlandson '41 and R. B. Watson; "Thermodynamic and Viscous Absorption in Fibrous Acoustical Materials," by Leo L. Beranek, staff; "Masked Differential Pitch Sensitivity of the Ear for Musical Intervals," by Richard H. Bolt, staff; "Frequency Response Fluctuations in Rooms. II. An Approximate Theory," by Richard H. Bolt, staff, and Robert W. Roop, staff; "The Directivity Factor of an Acoustic Radiator," by T. Finley Burke, staff; "The Modes of Vibration of Quartz Plates," by Robert I. Hulsizer, Jr., staff, and K. S. van Dyke; "Plate Vibration of Stringed Instruments at the Wolfnote," by John A. Kessler, staff; "The Use of Resonant Rods to Determine High Frequency Dynamic Modulus of Rubber," by Alfred W. Nolle, staff; "Frequency Response Fluctuations in Rooms. I. Experimental Investigation," by Robert W. Roop, staff; and "A Continuously Variable Standard Acoustic Impedance," by James E. White, staff.

*American Physical Society*

The Washington meeting of the Society, a pre-war tradition omitted since 1941, again took place on Thursday, Friday, and Saturday, May 1, 2, and 3, in the halls of George Washington University. Among the papers given by Technology Alumni and staff were the following: (invited) "Theoretical Foundations of Low-Temperature Physics," by John C. Slater, staff; (contributed) "Modulation of the Resonance Lines in a Cesium Arc," by John M. Frank '07, W. S. Huxford, and W. R. Wilson; "The Impending Change in the Electrical Units," by Francis B. Silsbee '10; "Diffraction of Neutrons by Hydrogen and Deuterium Containing Crystals," by W. L. Davidson, George A. Morton '26, C. G. Shull, and E. O. Wollan; "Theory of the Propagation of Shock Waves," by John G. Kirkwood '29 and Stuart R. Brinkley, Jr.; "An Attempt at a Statistical Theory of

Space-Time," by Nathan Rosen '29; "Proton-Proton Scattering," by I. H. Dearnley, C. L. Oxley, and Joseph E. Perry, Jr., '34; "The Behavior of Bubbles Produced by Underwater Explosions," by Bernard Friedman '35; "Methods in Cosmic-Ray Measurement in Rockets," by L. W. Fraser, R. P. Petersen, Howard Tatel '35, and J. S. van Allen; "A Simple Demonstration of Resonance Scattering," by Alexander S. Langsdorf, Jr., '37, and W. Arnold; "Resonance Scattering of Neutrons by Mn<sup>55</sup>," by F. G. P. Seidl, S. P. Harris, and Alexander S. Langsdorf, Jr., '37; "Foreign Ion Rejection in the Growth of Sodium Chloride Single Crystals from the Melt," by Raymond H. McFee '37; "Complex Permeability of Permalloy," by M. H. Johnson, George T. Rado '39, and M. Maloof; "Methods of Calculation of Radiation Patterns of Line Sources," by Roy C. Spencer and Pauline M. Austin '42; "Optical Absorption Bands in Alkali Halide Crystals," by Clifford C. Klick '42 and R. J. Maurer; "Elastic Coulomb Scattering of Electrons at Relativistic Energies," by William A. McKinley '44 and Herman Feshbach '42; "Meteorology of the Atmosphere between 10 and 20 Kilometers," by Thomas F. Malone '46 (at the joint session of the American Meteorological Society and the American Physical Society on May 1); "A Study of the Structure of Air Showers at 11,500 Feet," by Robert W. Williams '46 and Bruno B. Rossi, staff; "Cosmic-Ray Induced Nuclear Disintegrations at 11,500 Feet," by Bruno B. Rossi, staff, and Robert W. Williams '46; "Interpretation of Cosmic-Ray Ionization Bursts in Cylindrical Chambers by Pulse Shapes," by Herbert S. Bridge, staff; "The Microwave Absorption Spectrum of Carbonyl Sulfide," by Richard E. Hillger, staff, Malcolm W. P. Strandberg, staff, T. Wentink, and Robert L. Kyhl, staff; "Temperature Dependence of the Dynamic Modulus of Rubber," by Alfred W. Nolle, staff; "Crystallographic Non-Uniformity and Its Influence on the Thermionic Emission Properties of Clean Surfaces," by Wayne B. Nottingham, staff; "Ultrasonic Absorption in Liquids from 100 to 225 Mc/sec.," by Robert A. Rapuano, staff, introduced by Charles Kittel '38; "Phase Transition in the Hydrogen Halides," by Laszlo Tisza, staff; and "On the Interaction of Mesons with Nuclei," by Victor F. Weisskopf, staff.

*M.I.T. Club of Chicago*

The gala meeting of the club year was held on April 14 in the Casino Room of the Congress Hotel. Approximately 250 Alumni and their wives were present at the initial ladies' night banquet to entertain Dr. and Mrs. Compton. We felt very fortunate that our honored guests could stop over in Chicago on their way back to Cambridge from Honolulu. An hour of reception preceded the banquet, which seemed to be enjoyed by all. President Steinwedell '25 then thanked the dinner committee

chairman, John W. Barriger '21, and others responsible for the evening arrangements and, after introducing those seated at the speaker's table, presented our guest of honor.

Dr. Compton referred to the forces of progress at the Institute as "dynamic" in contrast to a static or nonprogressive situation either physical or ideological. The increased need for dormitory and recreational facilities and the human relation problems, also, are being solved in an efficient manner. The President recited many anecdotes of his Pacific tour to witness the Bikini bomb tests. He pointed out two interesting features of the probable manner in which the Atomic Energy Commission would act: first, that necessary decisions would be made by the Commission as a whole rather than separated into individual member responsibilities, thus tending to prevent the possible greed for power or conflict in the commission; second, that all laboratory and development work would be carried on by individual colleges and technical institutions or by privately operated industries instead of by commission-operated plants. The talk was timely and interesting.

The annual meeting of the Club will be held in June, when an interesting speaker is assured. Notices will be mailed. — SIMEY P. GRIFFIN '20, *Secretary*, Public Service Company of Northern Illinois, 72 West Adams Street, Chicago 3, Ill.

*M.I.T. Club of Cincinnati*

On February 25, President Compton was the speaker at the Senior Day Convocation and the dedication of a new science building at Western College in Oxford, Ohio. Philip Henderson, President of Western College, very graciously issued invitations to all Technology Alumni in the Cincinnati district to be guests of the college on that occasion. Bob Schildknecht '30, Fred Cellarius '16, and Howard Loring were fortunate in being in a position to make the trip to Oxford.

Our Club was again honored on March 21 by the visit to our city of H. E. Lobdell '17, Executive Vice-president of the Alumni Association. A dinner meeting was arranged for this occasion and presided over by our eminent president, Bob Schildknecht. Lobby was in fine fettle and, after an interesting message from the Institute, settled down to beer and a good bull session. Bill Schmiedeke '12 entertained the boys with solo renditions of Technology songs. He was accompanied on the piano by Art Brown '25. The Honorable Bill Beckett '34, mayor of our neighboring city, Hamilton, Ohio, invited the members to be his guests in Hamilton for the next regular meeting. This invitation was unanimously accepted — some members voting two or three times.

Brainerd B. Thresher, father of Professor B. A. Thresher '20, Director of Admissions at the Institute, was a guest at the

dinner. The following members were present: Moritz Sax '96, A. H. Pugh, Jr., '97, F. W. Garber '03, W. B. Fogarty '04, F. W. Morrill '07, C. H. Spiehler '08, Nathan Ransohoff '10, W. V. Schmiedeknecht '12, H. C. Fuller '16, C. F. Cellarius '16, F. S. Krug, Jr., '17, K. A. Wright '19, Lee Thomas '20, F. W. Spalding '22, J. S. Rafferty '22, Valentine Friedrich, Jr., '22, J. D. Cochrane, Jr., '23, J. C. Todd '23, A. C. Brown '25, Alfred Kullman '25, W. W. Carter, Jr., '29, G. F. Schatz '30, R. B. Schildknecht '30, Walter Sheblessy '30, William Beckett '34, A. D. Loring '34, S. I. Crew '34, Cason Rucker '35, J. M. Freiberg '37, J. W. Pearce '37, W. C. Francis '40, G. E. Power '41, D. S. McNally '41, W. S. Bundy '42, Stewart Rowe '43, R. T. Bradford '45. — GEORGE F. SCHATZ '30, *Secretary*, 701 Enquirer Building, Cincinnati 2, Ohio.

### *Technology Club of Hartford*

On the evening of April 23, sixty members and guests of the Club assembled in the dining hall of Trinity College in Hartford for an excellent chicken dinner, followed by the annual meeting. Norman J. Vile '16, President, called for the annual reports of the Secretary and Treasurer. The Club then voted to join the New Haven County Technology Club in a joint outing on Saturday, June 7, at the Pine Orchard Club, Branford, Conn. Joseph R. Krenn, Jr., '38 was appointed general chairman of the outing committee, representing the Hartford Club. President Vile reported that the members have voted 122 to 1 in favor of the revised constitution submitted by the constitution committee headed by Roger Davis '12, and that a check will be made to ascertain whether the required two-thirds affirmative vote has been reached. The report of the nominating committee, composed of F. P. Ward '26, chairman, J. Henry Giles '29, and Thomas D. Green '26 was tendered, and the following officers were nominated and elected: President, Louis J. Proulx, Jr., '36; Vice-president, William S. Wise '23; Secretary, Joseph R. Krenn, Jr., '38; Treasurer, Donald K. Morgan '32; director for two years, F. P. Ward '26; director continuing, J. A. Swift '27; Alumni Council representative, Malcolm Wight '06; class decade representatives, to 1900, E. C. Alden '95; 1900-1910, E. O. Hiller '04; 1910-1920, F. T. Crossley '10; 1920-1930, J. H. Giles, Jr., '29; 1930-1940, R. C. Molloy '33; 1940 to date, F. K. Loomis '40.

After the business meeting, the group adjourned to join the Hartford Kiwanis Club in a program arranged by George L. Mylchreest '10 and put on by Dr. Phillips Thomas, one of the Westinghouse Electric Corporation's outstanding research engineers, who displayed an amazing bag of tricks in the fields of electricity and electronics, with demonstrations showing the magic and versatility of a light beam transmitter, photoelectric cell, stroboscope, ultraviolet lamp, and radar set. — JOSEPH R. KRENN, JR., '38, *Secretary*, 55 Kelsey Street, New Britain, Conn.

### *M.I.T. Club of Cuba*

This newly formed Club had its first general meeting on May 16, 1946, when a constitution was adopted and officers were

elected, as follows: Manuel A. Cadenas '10, President; Antonio Helier Rodriguez '21, Vice-president; Roberto R. de Arellano '40, Treasurer; Gonzalo C. Docal '44, Secretary; and Joseph M. Aguila '45, Assistant to the Treasurer and Secretary. These officers have now served one year, and election of a new group will take place at the next meeting, scheduled for May 30. After the Club had carried on unofficially for nearly a year, it applied for formal recognition, which was granted by the executive committee of the Alumni Association at its meeting on April 28.

One important activity of the Club during the year was a meeting with Robert C. Hockett, Associate Professor of Chemistry, who visited Cuba in March, in his capacity of director of the Sugar Research Foundation. The interesting problems of sugar research were discussed over cocktails, and Dr. Hockett brought everyone up to date on the latest developments at M.I.T. — GONZALO C. DOCAL '44, *Secretary*, Calle 27, No. 902, Vedado, Havana, Cuba.

### *Indiana Association of the M.I.T.*

As a change from our usual second Wednesday meeting night, we entertained H. E. Lobdell '17, Executive Vice-president of the Alumni Association, on Monday, March 24, at the Antlers Hotel. Lobby told us of the present-day situation at the Institute, covering students, student requirements, student housing, tuition policies, finance, research, plant, instruction, and administration. The nominating committee reported, and the following officers for 1947-1948 were elected: Lowell L. Holmes '23, President; John H. Babbitt '17, Vice-president; and Samuel H. Hopper '33, Secretary-Treasurer.

The following men attended: J. Lloyd Wayne, 3d, '96, John B. Welch '13, A. H. Clarke '15, John H. Babbitt '17, H. E. Lobdell '17, Elliott G. Peabody '22, B. R. Haueisen '23, Lowell L. Holmes '23, Harry Karcher '25, F. Sidney Badger, Jr., '27, Thomas G. Harvey '28, Russell Fanning '30, Gustav W. Klumpp '30, W. Stewart Roberts '32, Samuel H. Hopper '33, Gordon E. Holbrook '39, John R. Diver '40, and John H. Brannan '41.

On April 16, the regular monthly meeting was held at Andrew's Golden Pheasant Restaurant. Instead of having a planned meal, it was decided to have the members select their own dinner. The food was good and the meeting room quite satisfactory. The distance to the restaurant seemed to be its only drawback.

The Association hears with sorrow that William M. Taylor '86, an active club member from the oldest class represented among us, passed away on April 24. Flowers were sent to Mrs. Taylor, who has written expressing her appreciation of our sympathy.

After the dinner and a short business meeting, President Peabody presented our President-elect for 1947-1948, Lowell L. Holmes '23, who talked on "Human Engineering." Lowell began this work as a hobby while in college and became so interested in it that he developed it into his profession. He analyzes people individually for themselves, or collectively for or-

ganizations. He rates their personalities and their capabilities. He determines their aptitudes and the type of work they are best fitted for. He explained how he arrives at his conclusions and gave several examples of his tests. He builds up his clients' self-confidence and explained how he could and did help businessmen to make their organizations more effective. The program was received with much interest and enthusiasm, and Lowell was most gracious in answering the numerous questions put by his audience.

Those present were J. Lloyd Wayne, 3d, '96, Arthur I. Franklin '98, John H. Babbitt '17, Elliott G. Peabody '22, Lowell L. Holmes '23, Paul V. Jewell '26, Thomas G. Harvey '28, Russell Fanning '30, Gustav W. Klumpp '30, Samuel H. Hopper '33, Edward R. Berry '42, and Ted R. Metzger '48. Mr. Glenn Kilcullen was Tom Harvey's guest. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

### *M.I.T. Club of Southern California*

Samuel C. Prescott '94 was the guest speaker at a pleasant dinner meeting held at Cook's Steak House, 9060 Wilshire Boulevard on February 14. Dr. Prescott's subject was "Dehydrated and Frozen Foods." He presented a brief history of the development of the science of food preservation, gave statistics on the use of dehydrated foods in World War II, and assured members that dehydrated foods were really enjoyable when prepared by a trained cook. (I wonder what G.I.'s think of this?) Dr. Prescott then presented the problems in the quick freezing of foods, particularly of foods grown in southern California.

Guests present were Sheldon and Donald Milliken. Members present: R. L. Alder '37, H. A. Babcock '12, W. W. Baldwin '39, Clark Barrett '23, P. K. Bates '24, H. E. Beebe '10, A. D. Carothers '24, J. C. Cochran '45, H. M. Cousins '37, M. K. Drury '39, J. S. Gallagher '15, M. F. Graupner '12, T. G. Gundelach '44, I. E. Hattis '34, J. B. Henderson '37, Rockwell Hereford '24, P. A. Herrick '24, R. S. Holmgren '19, D. M. Hughes '15, R. W. Hunn, Jr., '28, R. F. Huxtable '45, K. D. Kahn '15, R. M. Kallejian '16, M. H. Kaplan '42, K. C. Kingsley '23, H. W. Kohl '37, A. R. Laker '39, Y. N. Lee '39, H. B. Leslie '38, I. E. Liener '41, J. M. Longyear '10, F. F. Low '93, M. A. McClure '22, F. O. Merchant '33, C. S. Milliken '99, F. B. Morton '13, R. F. Petzold '45, J. B. Pitkin '37, R. B. Small '42, O. K. Smith '40, H. H. Strauss '38, E. V. Sumner '41, T. J. N. Taylor '24, H. M. White '44. — D. DONALD WEIR '38, *Secretary*, 1492 North Doheny Drive, Los Angeles 46, Calif.

### *Technology Club of New York*

The move from 24 East 39th Street over to the Architectural League was in many ways the best bombshell which has gone off in our midst for a long time. It has been the motivating power to get us going on a real activity program for the year 1947. The events are planned not only for members of the Club but for many other Tech Alumni, and all they have to do is to signify their desire to come out and see what



the club members look like. Although no pressure will be exerted (page Sam Reynolds'22) to join, it goes without saying that we hope many new Alumni will decide to cast their lot with us before the evenings are over. Sam, Andy Mooradian '34, and I will all have one or two application blanks stuck around somewhere, and the necessary pen with ink.

We opened our current season of activities on March 5, when Lobbie '17, was our guest speaker. More than 100 members and guests turned out for a delicious dinner and a pleasant evening at the Architectural League, 115 East 40th Street. Ray Rundlett '22, our Vice-president, presided, introducing all the big and lesser lights (no personal reflections, gentlemen — some by Act of Congress, I'm told). For the benefit of those of you who see The Review but failed to get our Spring News Edition, permit me to restate our activity calendar, to wit: April 22, Jack Zimmerman '23 and Sax Fletcher '18, chairmen, and Harold Edgerton '27, the speaker, with his films; Wednesday, May 21, annual club election of officers, with Jim Killian '26, Executive Vice-president of the Institute, as speaker, at the Architectural League; Friday, June 20, annual golf outing, Scarsdale Golf Club, Al Glassett '20, and Larry Davis '22, chairmen at the Scarsdale Golf Club; Thursday, September 18, first annual stein-and-steak dinner, Jacob Ruppert, brewery host, Sam Reynolds '22 and Jimmie Walker '26, chairmen. This affair is limited to 200; so don't delay. In October we shall have a club smoker at the Architectural League, with Dean Baker as speaker, and Doc Burdell '20, and W. J. Littlefield '17, chairmen. The Dick Ranger Bridge Trophy will begin again this year, running in October and November, with Mike Radoslovich '26 and Andy Mooradian '34 as chairmen. We shall wind up the season on December 9 at the Hotel Biltmore, with a banquet in honor of Dr. Karl Compton, President of the Institute.

The Spring News Edition carried a questionnaire wherein we are seeking considerable information on the desires of Technology Alumni in Greater New York. If you saw it, and haven't sent it back to us, please do so. If you didn't see it, won't you drop either George Dandrow or me a note, giving us your thoughts on what type of club you think we should have. Do you want overnight facilities, and if so, how frequently would you use them? How much would you pay for membership in such a club? Do you want our own restaurant? Our own bar, of course, but it takes more than promises to keep one of these things on a paying basis — members, more members, and the kind who will find the time and inclination, not to mention the wherewithal, to keep it going.

Will Technology men in the New York area, whose membership addresses we do not have, please send them direct to Lou Bruneau '38, care of Bruneau and Lillard, 150 Broadway, New York City. Lou has all the records now, except a few which I keep. Again let me remind you that the Architectural League serves luncheons on five days a week only and no dinners, except by previous arrangement with Mrs. Pedrick. There are no overnight rooms available, either. Much mail is accumulating at the clubhouse, and it would help all if

called for. — WILLIAM W. QUARLES '24, Secretary, McGraw-Hill Publishing Company, 330 West 42d Street, New York 18, N. Y.

### *M.I.T. Club of Northern New Jersey*

The spring meeting of the Club was held at the Essex House in Newark on April 15. Igor I. Sikorsky, the principal speaker, gave a summary of the development of the helicopter from its original conception to the present, when the design is being so advanced that its sponsors are now in a position to build ships which could carry from 20 to 30 passengers or 15,000 to 20,000 pounds. Up to date, with existing designs, the maximum load is one ton, the maximum distance 700 miles, and the maximum speed 115 miles an hour. He feels that the present type of helicopter has a tremendous field in short-haul mail services. It is also being used to handle forest fires, and rescue work on both sea and land. In the near future the development of jet radar may enable a newly designed helicopter to carry as many as 60 people.

Professor Jerome Hunsaker '12 of M.I.T. gave a résumé of events at M.I.T. The meeting was presided over by Walter L. Wise, Jr., '34, of Plainfield, President, and attended by approximately 100. A picnic for members and families is scheduled for the last of May. — DAVID T. HOUSTON '30, Secretary, 730 Broad Street, Newark 2, N. J.

### *M.I.T. Club of Panama*

After a long period of inactivity, the Club held a dinner meeting at the Tivoli Hotel in Ancon on Thursday, May 1. There was no planned program, the only purpose of the meeting being to renew old, and form new, acquaintances. A decision was made to hold meetings every six months in the future. The following members were present: Guy W. True '11, Meade Bolton '16, James R. Hawkes '19, Walter F. Christmas '23, Eduardo Icaza A. '23, Isbell F. McIlhenny '23, Gordon H. Crabb '24, Lewis B. Moore '26, Edmund G. Bromilow '26, Manuel P. Calderon '30, Howland S. Brewer '32, Constant W. Chase, Jr., '34, Richard R. Brown '35, George C. Dunlap '35, Clarence M. McMurray, Jr., '40, Marshall Waller '46. — CONSTANT W. CHASE, JR., '34, Secretary, Box 77, Balboa Heights, Canal Zone.

### *M.I.T. Club of Philadelphia*

The Club will celebrate its 50th anniversary on Tuesday, May 20, at the Hotel du Pont in Wilmington. Dr. Compton will be the speaker, introduced by Lammot du Pont '01. Alumni of the Class of 1897 and earlier will be guests of the Club.

Officers and executive committee members of your Club met at the Meridian Club on April 16 for dinner, followed by a business session. Present were Herbert W. Anderson '15, Frank S. Chaplin '32, Francis J. Chesterman '05, Henry S. Dimmick '22, Joseph Greenblatt '22, Robert M. Harbeck '28, Edward J. Healy '23, Howard Humphrey '26, George T. Logan '29, Samuel K. McCauley '41, Herbert R. Moody '41, Charles W. Stose '22, and Robert E. Worden '36.

Despite the current inflation, club dues will continue to be only \$3.00. This amount barely covers the cost of preparing and mailing notices of meetings plus the expenses incidental to the ordinary functioning of the Club. With dinner meetings on a self-supporting basis, no significant change is anticipated in the Club's finance.

Some time ago, we were invited to send a delegate to a meeting of the Technical Societies Council of Philadelphia. It seems that this organization is concerned chiefly with engineering and civic matters and has nothing in common with our Club. No consideration is being given to affiliating with this group.

The future status of the placement, planning, and guidance committee is somewhat uncertain at this writing. Having completed its prime objective of assisting Technology men in this region to make their postwar adjustments, the committee now awaits word from Cambridge as to the desirability of continuing this function.

As you know, our Club holds three meetings a year, on the third Tuesday of October, January, and May. The coming year promises to be the best in our history, with a slate of fine speakers and a steady influx of younger Tech men into the Philadelphia-Wilmington area. In addition to the three scheduled meetings, by popular demand we are arranging a smoker which will provide an evening of relaxation and good-fellowship in the early fall. — ROBERT M. HARBECK '28, Secretary, 605 Foss Avenue, Drexel Hill, Pa. Assistant Secretaries: SAMUEL K. MCCAULEY '41, 288 Copley Road, Upper Darby, Pa.; WILEY F. CORLI, JR., '39, Box 358, Bryn Mawr, Pa.

### *Worcester County Alumni Association of M.I.T.*

The Club met on April 10 at the Hotel Aurora, President Baxter '34 of Southbridge presiding. Robert M. Kimball '33, assistant to the President of M.I.T., spoke on developments at the Institute. The main address of the evening was made by Professor Erwin H. Schell '12, head of the Department of Business and Engineering Administration at Technology.

"Hard physical work won't be needed in the industrial picture of the future," prophesied Professor Schell, "Manual labor and physical work will be replaced by brains. This trend is already noticeable," he observed. "Many industries have found labor scarce, because people will not do heavy work under difficult conditions when they can do lighter work in good conditions for as much money."

Discussing the future for business and industry, Schell called for a broadening of objectives. He emphasized the need of greater effort toward customer, employee, and community good will. Declaring that the people have a right to know what goes on in big business, he said, "Only through proper public relations can free enterprise be secured." Criticizing the postwar pessimism of politicians, industrialists, scientists, publicists, and the clergy, he said that the real planning for the future is being accomplished by industrialists and businessmen who "look forward optimistically." — ROBERT G. CLARKE '35, Secretary, 17 Park Villa Avenue, Worcester 6, Mass.

## CLASS NOTES

1877

It is with regret that I have to announce the passing of one more of our classmates. William L. Hallett died on March 30 at the home of his son, Ray L. Hallett, 49 East 19th Street, Brooklyn 26, N.Y. I hope to have an extended notice of him in a future issue of *The Review*. Hallett's passing leaves only four of our Class still living. — GEORGE W. KITTREDGE, *Secretary*, 592 North Broadway, Yonkers 3, N.Y.

1882

Henry Francis Ross, President for 55 years of the Mercantile Wharf Corporation and one of the four surviving members of the Class, died on April 27 at the home of the widow of his brother, John H. Ross, at the Tudor, Joy and Beacon streets, Boston. Son of the late Matthias Denman Ross and Mary Waldo Ross, he was born in Boston on May 22, 1862, and lived at 146 Forest Hills Street, Jamaica Plain, until four years ago. He leaves two nephews, Thorvald S. Ross of Cambridge, and Harold S. Ross of Hingham. — RACHEL P. SNOW, *Acting Secretary*, 4 Pond Road, Falmouth, Mass.

1887

The 60th class reunion will take place this June. Realization of how rare an occasion this is in a lifetime should bring all able members to Boston on Friday, June 13, or on the morning of the 14th, Alumni Day itself. Headquarters will be at the Hotel Beaconsfield at 1731 Beacon Street in Brookline. The first event on the program will be the luncheon in Du Pont Court at M.I.T. The afternoon offers the alternatives of an aviation symposium or rest and informal visiting together at the hotel, to conserve strength for the evening. There will be a special table for '87 at the Alumni Banquet at 7.00 P.M. at the Hotel Statler. The next morning, as the flier so temptingly suggests, those who wish may breakfast in bed and recover at leisure for the class dinner, to be held at two o'clock on Sunday at the Beaconsfield. It is hoped that any local men who do not attend the reunion as a whole will at least come to this class dinner. Funds in the treasury are expected to cover all or most of the expense of rooms for the two nights in the hotel and of the class dinner — according to the publicity notice which you have probably all received. Replies should be sent to the President, Richard E. Schmidt, 104 South Michigan Avenue, Chicago 3, Ill., or, by New England men, to N. P. Ames Carter, 22 Grove Avenue, Chicopee Falls, Mass.

1888

The most interesting news to all '88 men is the marriage of our Assistant Secretary on March 22 to Mrs. Frances L. Marsh at the home of his cousin, Dr. S. A. Winsor, in Pompano, Fla. Mrs. Marsh has been his secretary and associate in literary matters for several years. They will be at home at 1090 Walnut Street, Newton Highlands, Mass., after a tour of several weeks up the Atlantic coast from Florida. Sanford says that while in Sarasota he "bowled on the green" or "shuffled on the shuffleboard" nearly every day, with occasional golf on

the Bobby Jones Links. There was a fine beach near Sarasota, but the weather and water were too cold for bathing. — Fred Nichols has a new address — 1112 East Mount Vernon Avenue, Orlando, Fla.

To our great regret, we must record the death on February 4 of John G. Faxon. Faxon was our biggest newspaperman and the class poet. The long poem he wrote and read aloud to us for our 50th anniversary celebration in June, 1938, is a well-remembered feature of the reunion. The following excerpt is from the *Boston Herald's* account of his life: "A native of City Point, Va., an Army camp, he was born there Dec. 9, 1864, in a log cabin built for his mother at the camp where his father was regimental surgeon. His ancestors settled in Boston in 1630 and he passed his boyhood in Quincy. He was graduated from Quincy High school in 1880, Adams Academy in 1884 and attended . . . Technology for one year. He then went to Newburyport and worked in the mechanical and editorial departments of the Newburyport Herald, long owned and published by his family. He later was night editor.

"In 1880, he joined the Boston Herald as an editorial writer and special correspondent and in July 1889 settled in Fitchburg, covering a district for The Herald extending from Ayer to North Adams and into New Hampshire and Vermont until 1906. During his association with The Herald, he covered all trips of President McKinley and Theodore Roosevelt in New England and Admiral Dewey's return to this country. One of his major scoops was an interview with Rudyard Kipling who was living in Vermont and vowed he would never submit to an interview.

"He worked for the Fitchburg Evening Mail for a time and then for 12 years was on the staff of the Fitchburg Sentinel. He attended the national convention in St. Louis in 1896. He was a member of the city council, 1899 to 1900; clerk of the council, 1906-1910; trustee of the public library since 1906; a State legislator, 1913-16; secretary to Congressman Calvin D. Paige in Washington, 1917-1923." He served as postmaster in Fitchburg from 1923 to 1935 and was a prominent Republican in that city, where he leaves his wife, Mrs. Alice (Holmes) Faxon; a daughter, Mrs. Elizabeth Butterfield, and two grandsons.

Ralph Sweetland invited the Class to dine with him on Tuesday, April 22, at the famous Algonquin Club, 217 Commonwealth Avenue, Boston. Your Secretary was unable to be present at this Class dinner as he drove with Mrs. Collins and daughter Dorothea, as chauffeur, from Princeton to Chebeague Island, Maine, passing around Boston and spending one night in Wellesley. He plans to spend about five months on the island where the Class celebrated its 35th anniversary of graduation in 1923 and then return to Princeton. — BERTRAND R. T. COLLINS, *Secretary*, Chebeague Island, Maine. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1890

Honors continue to come to '90, Sherman having recently received honorary membership in the Boston Society of Civil Engineers, the oldest engineering society

in this country. The citation reads: "In recognition of a long and distinguished career in the field of water works engineering and in the advance of engineering knowledge Charles Winslow Sherman has been elected an honorary member by direction of the board of government, February 19. . . ." Congratulations to the man who can carry these honors and also serve as president of a bank.

The Secretary, after a few weeks in Florida, spent several days at the 75th anniversary celebration of the American Institute of Mining Engineers in New York and finished by slipping in a bathtub and breaking two ribs. In the course of his travels, he had the pleasure of renewing acquaintance with three '90 men. Down in southern Florida, at St. Petersburg, he found William P. Flint, who with Mrs. Flint goes there regularly from Coudersport, Pa. They looked hale and hearty and seem to have found the right system for comfortable living.

At Mandarin, 12 miles south of Jacksonville, Fla., we found Philip Hammett on one of the delightful estates on the east bank of the St. John's River, at a point where it is probably more than a mile wide. From his house we saw a wonderful sunset. He had already completed four years at Harvard when he came to Technology, where he took the Course in Mechanical Engineering. Because of the amount of work he was obliged to cram into two years, he says that he did not become very well acquainted with his fellow students, though he did remember some of those who took Course II. He began work with the Pennsylvania Railroad but later became connected with the Maine Central at Portland, where he continued for many years. Subsequently, he lived in New York for a short time, going abroad occasionally.

In Washington a delightful hour was spent with W. B. Poland, who, unlike many of us, still has plenty of hair, and it is not white. As a result of his knowledge of Alaska and the Philippines and other countries, which he obtained while building roads or acting as consultant, he was able to be of great assistance to the Army and Navy during the war. He is still active in consulting work on large undertakings. Mrs. Poland, too, did some remarkable work for the Federal Bureau of Investigation, and probably they were the outstanding active representatives of '90 during that period; though the Secretary would be glad to learn in more detail what others did.

Cabot J. Morse, whose death last summer on August 21 has been chronicled, was at Technology only one year and later was in business for several years as a stockbroker. Many years ago he retired and traveled a great deal. Reading and golf, which he played until a few weeks before his death, were his special interests. He is survived by his wife and by the son of a former marriage.

Morten Carlisle died on March 10. From 1890 until he retired in 1926, he followed electrical engineering, having founded in Cincinnati in 1894 the firm of Carlisle and Finch, which is still in existence. Grandson of a pioneer who went to Cincinnati in 1817 on horseback, and son of a prominent architect, he not only maintained his interest in engineering to the last, but was prom-

"Come Back To Tech" — Saturday, June 14 — Annual Alumni Day



inent in the establishment of state parks and memorials. From an editorial in the Cincinnati *Times-Star* the following is quoted: "Searchlights on boats that ply the rivers of the country seek out landmarks on the shores and illumine the waters ahead. In the shadows behind them is the figure of Morten Carlisle, once head of the company that made nearly all of them — a symbolical figure, because he shed light for others and preferred the shadows for himself. He died, little known in Cincinnati perhaps, except among those of kindred interests, and yet one of the most useful, rugged-minded and interesting men of his time. On the border of a state memorial stands a giant sycamore. It would have been felled years ago in the operation of a lumber company had not Morten Carlisle bought it and given it to the State. That park was his life-long passion. After persuading Ohio to establish it, he purchased and added to it hundreds of acres of adjoining land. The creation of a state park at Rocky Fork in the same region was another of his concerns. There seemed to be hundreds of others of a kindred sort — defining Zane's trace, marking Mad Anthony Wayne's route, seeking out Ohio's historic spots and notable scenery. Nor were Carlisle's interests confined to his state. He belonged to a nature-minded group who called themselves the Bridge Finders, who made a pilgrimage to the Ozarks; followed Morgan's trail from Kentucky to the battle finish at Buffington Island Ford; discovered Kentucky's land of Calaboose and its incredible Sky Bridge." Besides engineering societies, which have adopted memorial resolutions, he belonged to historical, archaeological, and wild flower preservation societies. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

### 1893

Frank Lee Connable died in Palm Springs, Calif., on March 14. For many years he was a resident of New York City and vice-president of E. I. du Pont de Nemours and Company, in charge of the company's manufacture of black powder throughout the nation during World War I. The New York *Herald Tribune* continues as follows: "Mr. Connable engaged in the manufacture of powder from the time of his graduation from . . . Technology in 1893 until his retirement after the first World War. He started in Chicago, then joined the Chattanooga (Tenn.) Powder Company, which had been founded by his father. He succeeded his father as president of that company. In 1902, when E. I. du Pont de Nemours of New Jersey was organized, Mr. Connable was chosen by T. Coleman du Pont to serve on a committee to appraise all the black-powder mills that had been acquired by the corporation. He later was made assistant to Alfred I. du Pont, then vice-president in charge of the black powder department. He later succeeded Alfred I. du Pont as a member of the executive committee of the company and as vice-president in charge of black powder production. He held this position during the first world war. Failing health required his retirement shortly after the war.

"An enthusiastic sportsman, Mr. Con-

nable was an outstanding senior golfer and established noteworthy records as a deep-sea fisherman. He fished Atlantic coastal waters from Maine to the Bahamas and Cuba and once was described by 'The National Geographic Magazine' as the only person ever to harpoon and land a killer whale on the American coast. As a young man he hunted big game and was an ardent motorist in the days when merely climbing behind the wheel of an automobile was regarded as an adventure. Mr. Connable won in 1908 the first roadability race of the Delaware Automobile Association. He was a member of the New York Yacht Club, an honorary member of the Wilmington Country Club, a member of the Garden City Golf Club, the Annandale Country Club, Pasadena, Calif.; the Wilmington Club, and the Du Pont Country Club, Wilmington. In 1904 Mr. Connable married Julia Killiam Hosford, who died Jan. 4, 1924. Surviving are a sister, Mrs. Joseph F. Lancaster, of Boston; a niece, Mrs. Wakefield Worcester, of Washington, Conn., and a nephew, John Connable Bennett, of New York."

After an illness of several months, Frederick Dexter Smith, born on November 9, 1863, passed away on April 20 at the New England Sanatorium and Hospital, Melrose, Mass. After his preliminary education in the Killingly, Conn., public schools, and before coming to the Institute in 1889, he completed the course for teachers at the New Britain, Conn., normal school. As a student at Technology, he won a three-year scholarship in Civil Engineering. After graduation he was associated with the construction of the Boston Subway. For more than 40 years, Smith was employed by the Metropolitan District Commission of Massachusetts, working up from clerk to director, and then to chief engineer in charge of the sewerage division of the commission in 1912, a position he held until his retirement in November, 1933. He is survived by his wife, the former Sarah Jane Chase, whom he married on February 10, 1884; a daughter, Mrs. Ethel Ray Geroy; a son, Horace Edwin Smith, and three grandchildren. Representing our Class, Spofford, who became well acquainted with Smith during his four years at the Institute, and the writer attended the funeral service at the Ward funeral home in Malden, Mass., on April 23. — FREDERIC H. KEYES, *Secretary*, Room 7-211, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston 16, Mass.

### 1894

One of the books of the year in the accounting field is from the pen of Luther Nash, who has long been recognized as an expert in the field of public utilities. The book bears the rather unusual and intriguing title, *Anatomy of Depreciation*, and the explanatory statement that the book is "a discussion of utility accounting methods from time to time in effect or proposed by regulatory or utility representatives, with particular reference to recent controversies." In his foreword, Nash states that the one exception to present standardization of public utility accounting in the United States relates to depreciation accounting, the discussion of which is the purpose of his present book. As he has been

professionally engaged with depreciation problems for more than 40 years during his career as engineer, manager, supervisor, and consultant, he is pre-eminently able to discuss his subject with intelligence and authority. Nash is also the author of two other books dealing with public utilities, *Public Utility Economics* (1925) and *Public Utility Rate Structures* (1933), and is a nationally known figure in his field. Reference to the new book will probably appear elsewhere in The Review.

While on the subject of publication by members of the Class, the Secretary will mention another paper by Charles G. Abbot, who for years has given most searching study to the effect of the sun on our temperature variations on the earth. The present paper of 33 pages is the latest of a series of his reports published by the Smithsonian Institution, under date of April 4 of this year, and is entitled "The Sun's Short Regular Variation and Its Large Effect on Terrestrial Temperatures." He shows that there is a regular period of somewhat above 6.6 days in solar variation and that terrestrial temperatures respond with changes ranging from two to 20 degrees in exactly the same average period of recurrence. Abbot has continued to work at the Smithsonian as a research associate ever since his retirement as secretary of that august and famous institution. His international fame needs no advertising among the members of our Class — nor does that of the next man to be considered in these class notes, Henry E. Warren. Through the kindness of a fellow secretary (O.B.D.) '11, a clipping from the Worcester *Telegram* of April 13 came to hand, announcing that on April 20 Warren was to be honored by associated electric companies of America in a program in the Worcester Auditorium. The occasion was the celebration of the 30th anniversary of Warren's invention of the Telechron master clock, which assured the accuracy of modern electric time and will be high-lighted by oral tributes to "the man who gave America the correct time." Attention was directed in this clipping to the history of some of his inventions. Warren first invented his electric clock using a barn on his small farm in Ashland as a laboratory. This was nearly 40 years ago. In 1912, he organized the Warren Clock Company, using the barn for his factory. After developing a battery-operated clock, he spent four years designing a synchronous and self-starting motor for an electric clock to be run by alternating current but found it was necessary to regulate the current because of variations. This led to the invention of his master clock to eliminate errors in frequency. The clock now known as the Telechron was instantly successful, and one was installed at each regulating station of the Edison system in October, 1916. Since then its use has spread, and it is probable that more than 99 per cent of all alternating current in the country is regulated by clocks of this type. The clocks are now manufactured by Telechron, Inc., in four large plants in Ashland, Framingham, Lowell, and Worcester. From three employees, in the early days in the barn, the business has increased to require several thousand operatives. Warren served as president of the company until 1943, when he retired to the farm where he began. A report from the

same newspaper on the day following this event stated that more than three thousand people were present and told of the enthusiastic tributes to Warren by I. W. Kokins, present President of Telechron, Inc., and John West, President of the Worcester County Electric Company, lauding him as the world-recognized genius who not only invented the electric clock but made many other inventions which have been of great significance and usefulness. Warren modestly replied, tracing the history of time-keeping devices and of his own invention. Quite characteristically, he praised the electric power companies for the co-operation which greatly aided him in his work and stated that he feels that inventors have the most opportunity to develop their ideas under the free enterprise system with its freedom in which to work and the incentive which the system provides. Warren's activities have not been confined to clocks. From 1902 to 1920 he was superintendent and engineer for the Lombard Governor Company and has been its president since 1937. He was a consulting engineer for the General Electric Company from 1919 to 1940. He has held the most important of town offices in Ashland — has been on the Town Forest Committee since 1937, a trustee of the Framingham Union Hospital, of the Middlesex County Extension Service, and of the Algonquin Council of the Boy Scouts of America. For several years he has been director of the Summer Institute for Social Progress at Wellesley College. His scientific ability has been recognized by the award of the Wetherill Medal of the Franklin Institute in 1935, and by the award of the Lamme Medal of the American Institute of Electrical Engineers in the same year. Every classmate who knows this modest and unassuming man (and we all do) will rejoice that he has been thus honored for his distinction and character. Good boy, Harry!

The Secretary reports with great appreciation that on April 15 the Department of Food Technology held an open house and informal reception to other departments of the Institute to inaugurate the establishment of the new Samuel Cate Prescott Laboratories of Food Technology. These new laboratories, although at present located in a so-called temporary building, are excellently equipped and well arranged to handle both teaching and research in the fields broadly covered by the term "food technology" and are a great advance over the facilities that have at any time previously been available for this work. It was intended that the date of this pleasant event should fall as nearly as possible on the 75th birthday of the man whose name has been graciously and officially given to the laboratories, and it is not without deep feeling that he here expresses his thanks to all those who came to offer their congratulations as well as to see this new and especially useful series of laboratories. He little thought 50 years ago that his first course on industrial microbiology, given in 1896, would ultimately expand to become the foundation for a widely known department of the Institute. Verily, a teacher never knows in advance to what ends his teaching and influence may extend.

These notes must end on a sad note. After the above material had been sent in

for publication, came the distressing news of the death of one of our most useful and prominent classmates, Lewis Greenleaf. One of the Course VI group, he was a brilliant and popular student, active in class affairs. Ever since graduation, he had lived in Albany, where he had taken a large place in the business and charitable organizations of the city. His career is briefly reviewed in the following statement from one of the Albany newspapers of April 28: "Until his retirement from business several years ago, Mr. Greenleaf was treasurer of Behr-Manning Corporation, Watervliet. He had helped found the original Manning Abrasive Company in the early part of the century with the late John Manning. Born in Lenox, Mass., July 26, 1872, Mr. Greenleaf came to Albany soon after graduation from . . . Technology in 1894. His first job in Albany was with the old Hudson River Telephone Company. Mr. Greenleaf retired two years ago as treasurer of Albany Hospital. He also had served as president of the board of Albany Medical College, president of the board of Trinity Institution, president of the Albany Community Chest and chairman of the Albany Red Cross. He was a vestryman of Trinity Episcopal Church.

"Mr. Greenleaf is survived by his wife, Florence Jones Greenleaf; two sons, Lewis S. Greenleaf, Jr., of Loudonville and New York City, who was New York regional chairman of the War Production Board, and Dr. Richard Greenleaf of Bellevue Hospital, New York City, and a daughter, Mrs. Francis Philip Nash, Jr., Groton, Mass. Mr. Greenleaf was a member of the Fort Orange and Schuyler Meadows Clubs, Albany, and the St. Anthony Club, New York City. He also was a member of Delta Psi Fraternity." The deep sympathy of the Class is extended to his family. Although few months now pass without diminution of our ranks, we are filled with sorrow that another of the men of splendid character and personality has been taken. We shall remember him with pride. — SAMUEL C. PRESCOTT, Secretary, Room 3-233, M.I.T., Cambridge 39, Mass.

#### 1896

The Florida transients have started back north. Moat has returned to Burlington, Vt., with report of a satisfactory visit in spite of the Floridian low temperatures. Myron Fuller writes from Fort Myers that summer began there about April 1, with temperatures up to 86 degrees, which was a real relief after the cold weather of February and March, when temperatures as low as 36 degrees prevailed at Fuller's house, and frosts in the country extended as far south as the Everglades. He started north on April 27, going by way of Norfolk and the ferry across Chesapeake Bay, and thence up through Delaware. He expected to be at his old camp at Easton Pond, near Brockton, until October. Sager sent a card from Miami the last of March saying that he and Mrs. Sager were touring Florida and having a lot of fun. They had gone down the East Coast and were returning up the West Coast, roaming around more or less on their way back. Con Young wrote the last of March that at St. Petersburg they were still having some cloudy and chilly weather. He and Abby planned their motor trip back to Cape Cod for the last of

April. He was emphatic in his statement that this had been one of the coldest and wettest seasons the Youngs had ever experienced in Florida, and he doubted whether there had been more than two warm days a week since last December. St. Petersburg has always advertised its sunshine, but during the last two months there have been more "no sun from sunrise to sunset days" than for several years previous. It looks as if Con and Abby would be happy to get back to Cape Cod for the summer to bask in the sunshine there.

Jacobs in Burlington, Vt., did not go to Florida, but he and his wife were on the point of making a trip to Washington in the latter part of March, to attend the meeting of the American Geology Association and other festivities there, when he suffered an attack of influenza, which was almost epidemic in Burlington. He had a real attack, such that after a delirious night he was hurried off to the hospital and kept there for four days. At last accounts he was convalescing satisfactorily, although somewhat slowly, and they were planning to take their postponed trip a little later.

The gathering in New York came off as scheduled at the President Tavern on March 18. Some classmates experienced a little difficulty in arriving because of the advance notice which referred to the President Cafeteria on 41st Street instead of the President Tavern, which has its entrance around the corner on Lexington Avenue. Those present included Bakenhus, Dorance, Hall, Litchfield, Locke, Sager, Stevens, Stoughton, Tilley, and Trout. Walter Stearns arrived after the party had broken up, when only three classmates remained to greet him. It was particularly stressed that five of the 11 present at the dinner came from out of town, and some from a considerable distance. Paul Litchfield, for example, had an engagement in New York next day, and consequently he had come on to New York a day ahead only to be with us. Stoughton had another engagement to attend a directors' dinner and meeting of the American Institute of Mining and Metallurgical Engineers that same evening, but he stayed with us all through our dinner, and even for a while afterward until he had to go to the directors' meeting. The dinner was the best we have had throughout all the years, and hope was expressed that all might be present again next year, including some of those who unfortunately could not attend this year. Rockwell was on his way back from a visit to his brother in Tennessee, and Locke was in New York for the week attending the A.I.M.E. meetings. We missed some who had attended in former years. Jim Melliush had moved to Albany and could not come. Rutherford is now in Australia. Ruckgaber was not well enough to come. Father Partridge was in the South attempting to regain his health. Ralph Henry and Damon had expected to attend from Boston but finally gave up the idea. Bates would have come from Philadelphia, but he had just been having a checkup in the hospital and, though entirely well, he did not feel that he could make the trip. Arthur Baldwin, who had just returned from Florida, was busy preparing for a trip to Europe and could not be with us.



Freedman had expected to attend, but another banquet to which he had definite obligation to be present interfered. Coolidge was expected from Schenectady but could not make it. Starr was in Florida during the month of March and was unable to attend.

Rockwell and Locke returned home from New York at the end of the week following the dinner and both were immediately hospitalized, although the hospitalization could definitely not be ascribed to any ill effects of the New York dinner or their New York trip. Rockwell had a very bad cold, which confined him to his bed for more than a week, but from which he recovered fully. Locke developed a recurrence of his tired heart, so that he was put into the M.I.T. Infirmary for a period to give his heart a chance to rest. He is able to state that he is getting along very satisfactorily according to the report of his doctors.

George Hatch passed away suddenly in West Newton on April 4, suffering a heart attack while engaged in raking leaves. Hatch was with us as a student in Mechanical Engineering. After leaving Technology, he became associated in his father's coal business in West Newton until his father's death in 1908, when he continued to carry on the business with his brother until he retired. Hatch had been with us at some reunions and other gatherings in earlier years but in more recent years had become a sufferer from arthritis, which prevented him from getting around easily, so that we have not seen so much of him. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

### 1898

The varied fields of activity of our classmates include the ministry. Concerning Donald N. Alexander, IV, the Worcester, Mass., *Telegram* writes as follows: "Rev. Donald N. Alexander, rector of St. John's Episcopal Church, is retiring after a career that has included architecture as well as the ministry. A graduate of . . . Technology, he was employed by Stone & Webster, Boston, until he turned to the Church. Selected by the Boston concern to be architect in charge of its London branch, he decided instead to study for the ministry and entered the Episcopal Theological School, Cambridge. Rev. Mr. Alexander came to his Worcester ministry from the rectorship of St. Mark's Church, Leominster, and was previously senior curate at Christ Church, Springfield. He has been rector at St. John's since Sept. 24, 1918." We should be interested to hear from you, Donald, as to what extent you consider that your scientific and architectural studies at the Institute helped you in the work of building the Church.

Another builder in another line, Albert W. Gray, is accorded a considerable write-up in the *Hartford Courant* on the occasion of his retirement, as follows: "Albert W. Gray of Farmington, assistant to the president of the Hartford Electric Light Company for the past 21 years, retired Dec. 31. He was educated at the Boston English High School and . . . Technology. At the beginning of his engineering career, he was successively resident engineer for the

Massachusetts Highway Commission, construction engineer in the development of interurban trolley systems in New England, engineer in charge of the development of Monument Valley Park in Colorado Springs, Colo., and street commissioner of Colorado Springs. In 1907 he was engaged by the Colorado Power Company to assist in studies of the water resources of Colorado for power purposes and upon the completion of these studies was appointed construction engineer for the development of water power. Subsequently he was made construction manager of the Colorado Power Company, having charge of the Glenwood development on the Grand River on the western slope of the Rocky Mountains and of the Barker Dam, to provide regulation for the Boulder Development of the Colorado Power Company.

"Upon completion of the Colorado developments, he was engaged by Stone and Webster Engineering Corporation of Boston, as superintendent of construction and for many years directed hydroelectric and high tension transmission installations in Washington, Georgia, Alabama and Connecticut. He directed the construction of the Falls Village hydroelectric station of the Connecticut Power Company, together with the Falls Village-Bristol-Hartford transmission line and the high tension switching addition to the Dutch Point station of the Hartford Electric Light Company. During World War I, he became works manager of Harvey Hubbell, Inc., of Bridgeport. After the Armistice he was engaged as works manager of Billings and Spencer Co., Hartford, and later became general manager of the Bristol Brass Corporation. In 1926, he joined the Hartford Electric Light Company. Mr. Gray was for 16 years chairman of the board of directors of the Hartford Electric Steel Corporation, in which the Hartford Electric Light Company was interested. He is a director and vice-president of the Columbia and Rensselaer Telephone and Telegraph Company, a New York corporation. He is a member of the Country Club of Farmington." The article also displays a photo of our classmate, looking very alert and fit.

"Teacher Loath To Retire After 48 Years" is the heading of an article in the *Brooklyn Eagle* concerning Willard B. Nelson, which continues as follows: "I'd do it all over again." Willard B. Nelson's direct response left no doubt that he had enjoyed his life's work. Retired on Feb. 1, after spending 47½ years of his 48-year teaching career at Manual Training High School, Mr. Nelson asserted that he was rather 'loath to retire. I love teaching,' he explained. 'It keeps me young. I haven't missed a day in the past 25 years. The daily association with teenagers has enabled me to maintain a youthful point of view. Why, I'd rather teach than do anything else in the world.' On the subject of retirement, Mr. Nelson deplored the plight of the city's fixed pensioners who, he said, are bearing the brunt of the high cost of living. He suggested the launching of a movement to obtain for the pensioners a cost of living bonus or permanent pension increase. 'This action,' he warned, 'should be undertaken only by those with the vital energy to see it through.' The article goes on: "Mr. Nelson began his tutoring career in

1899 as a science teacher in Rutgers College Preparatory School, New Brunswick, N.J., where he remained six months. His next assignment brought him to Brooklyn — to Manual Training High School, where he remained for 47½ years, and where he doubtless would have served longer had he not reached the compulsory retirement age of 70. Born in West Burke, Vt., on Oct. 20, 1876, Mr. Nelson attended St. Johnsbury Academy in Vermont and received his Bachelor of Science degree from . . . Technology in 1898. He obtained his Master of Science degree from New York University in 1917. When Mr. Nelson started teaching in Manual Training in 1899, the school was located at 76 Court St., where it was established in 1894. The present building on 7th Ave., between 4th and 5th Sts., was opened on Jan. 3, 1905. In 1922 Mr. Nelson was appointed chairman of the department of physical science, the position he retained until his retirement. In this capacity, he planned the department's program and supervised a staff of 15 science teachers. His plans for the future include an automobile tour of North America with Mrs. Nelson. He lives at 466 3d St., and has a summer home at Lake George." A pleasant trip, Willard, and tell us all about it.

Unexpected pleasures are the most delightful. George Cottle and Ed Milliken have hunted up the Secretary in his new location; L. J. Seidensticker, en route from New York to Montreal, rang up for a visit; and in the vicinity of the Parker House one day, we ran into George Treat. George Cottle approved of our new layout and commended the removal of offices and laboratories from uptown and their consolidation at the factory on the water front. Later, we had our annual opera night together. George and the writer always plan to attend one performance when the Metropolitan makes its annual trip to Boston. First, during dinner at George's club, we considered seriously and at some length the 50th. We wish to make this a notable occasion, which will be a delightful remembrance for all time. After dinner we attended a performance of Verdi's *Otello*, which was well sung and acted and splendidly orchestrated.

On April 2, George and his sisters left on an extensive motor trip, planning to drive south via Washington and North Carolina to the Big Bend country of Texas, then west to California, north to Washington and the Canadian Northwest, and then home again. A card mailed on April 10 from El Paso, Texas, states the following information: "We reached here this noon after a very enjoyable trip, though no picture weather — mostly cloudy and cool. The roads were wonderful all the way, and we enjoyed Natchez, Miss., very much — beautiful old homes, azaleas, camellias and luxuriant wisteria. We saw much roadside color between Beaumont and San Antonio." We hope the weather will improve, George, for we are looking forward to seeing the pictures of the trip.

Coming into the office one morning, who should be waiting there but Ed Milliken, who had called first at the old address and then was good enough to hunt us up at the new address. We haven't seen Ed since the student days of qualitative chemical lab in old Walker back in '95. A letter from

him was included in the '98 class notes for January. We had a grand time reminiscing. Ed lives in New Bedford and at times sees other '98 men of the city — Ira Chace, Jim McIntyre, "Admiral" Robinson, and Charlie Wing, and attends meetings of the Technology Club of New Bedford. Thanks for the visit, Ed. Call again when we are in better shape to receive visitors and, in any event, let us see you and Mrs. Milliken at the 50th.

Imagine, also, the thrill when over the telephone came the voice of Seidensticker, whom the Secretary has not seen since the 40th. As we were planning to go home early that day to forestall a cold, it was easy to call it a day and to lunch and spend the afternoon at the hotel with Seide. And, in the course of four and one-half hours, did we travel all around the world and go all over '98 and M.I.T. history of the past decade! Seidensticker, after a year as instructor at M.I.T., has stuck consistently to the sugar industry. After a half dozen years in Cuba and Mexico and another half dozen years in the vicinity of New York with Arbuckles and Warners, he went, in 1913, to St. Johns, New Brunswick, as manager of the Atlantic Sugar Refineries, Ltd. In 1920 he was transferred to the Montreal office as vice-president, and since 1923 he has been president of this important concern. Seide was returning from New York after attending a meeting of the Sugar Research Foundation, Inc. This foundation was organized by all the principal sugar refineries of the North American continent and of the West Indies. The scientific director is Robert C. Hockett, formerly of M.I.T., who was recommended by Dr. Compton. It is planning to undertake original research, but up to the present the policy had been to make grants to competent scientific institutions; thus, recently a grant of \$25,000 to M.I.T. for biochemical research on carbohydrates. A daughter, Katharine, M.I.T. '34, whom Seide affectionately calls "Kitten," is married to a Swedish national. Her home is at Saltsjobaden, just outside Stockholm. She has three children — Louise, aged 11, Olaf, eight, and Anna, four; and is Seide proud of those grandchildren! After the war the daughter flew from Stockholm to Presque Isle in 16½ hours flying time and a few months later the rest of the family followed in a slow transport that took 24 days. Those who would like to write to Seide can reach him at the following address: Lewis J. Seidensticker, President, Atlantic Sugar Refineries, Limited, P.O. Box 7, Montreal, Canada. Thanks, Seide, for the visit and for everything and we will see you soon again.

George Treat has retired from active business but claims that he is working harder than ever. He is interested in the Massachusetts Memorial Hospital, Hebron Academy, Maine, and various other projects. He keeps an office with his old concern and drives in regularly to the office from his home in Braintree. He rises early and frequently works late in the evening. His face lights up when he talks in his easy conversational manner of the projects in which he is interested. He made, also, a few suggestions for the 50th.

Another classmate, Henry H. Sullivan, has passed within the Unseen Temple. The following notice appeared in the Boston

*Herald*: "... Henry H. Sullivan, 70, of 98 Foster Street, Brighton, mechanical engineer ... died ... [March 30] at Baker Memorial Hospital. ... A graduate of ... Technology in 1898, he was associated with the Strickney & Poor Spice Company and the New England Scale Company until his retirement last year. A deacon of the Brighton Congregational Church for more than 25 years, he was past master of the Bethesda Lodge of Masons, Brighton; past commander of the Cambridge Commandery, Knights Templar; past patron of the Evangeline chapter of the Order of the Eastern Star, and a member of the Sons of Union Veterans. He leaves a daughter, Mrs. Ruth Mackenzie, and a sister, Mrs. Gertrude M. Sullivan, both of Brighton." Those who have attended M.I.T. and class reunions will remember Sulli's enthusiasm and radiant spirits. We shall miss him at the 50th.

The following announcement appeared in the New York *Herald Tribune*: "Announcement is made of the marriage Feb. 16 at Clearwater, Fla., of Miss Elizabeth Claire Potts, daughter of the late Louise B. Potts and Judge J. Herbert Potts, of Jersey City, N.J., to Mr. Reginald Sprague Tobey of Boston, Mass. The bride is a member of the American Institute of Decorators and lives at 142 East Fifty-third Street, this city. Mr. Tobey attended ... Technology and was for many years in the export business in South Africa, China, and Brazil. The couple are passing the winter with Mrs. Myra D. Hegeman, in Granada Apartments, Sarasota, Fla. They expect to return to New York about April 1." Our best wishes to the bride and groom, and we hope to see them at the 50th.

To the many who are planning to come to the 50th, let us suggest that you take in Alumni Day on June 14. This will give you an idea of how the specific class reunions fit into the general M.I.T. festivities and functions. We may see how our old friends of '97 — good luck to them — stage their 50th, and there will be an opportunity for us to get together and plan definitely for 1948. It may be impossible for those at a great distance to come to Boston this June; but those in close proximity can assuredly make it, and we shall be looking for you.

— EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass.

#### 1899

Word of the death of John E. Congdon, II, on March 12 has been received through his son, Roger P., of the Class of 1933.

After graduation from Technology, John Congdon went to Paterson, N.J., for his first job with the Ferguson Construction Company as an engineer working on mill construction projects. In 1900 he went to work for the New York Belting and Packing Company in Passaic, N.J., and soon rose to the position of master mechanic. Shortly thereafter the New York Belting and Packing Company was taken over by the United States Rubber Company. His responsibilities rapidly increased, resulting in his being promoted to the position of chief engineer of the Passaic plant. One of the interesting projects which he supervised was the construction of a four-story brick building around an existing two-story structure, keeping all equipment in operation during the construction pe-

riod. In 1920 he was made supervising engineer of the mechanical division of the United States Rubber Company, and in 1925 he was also made supervising engineer of the footwear division. In this capacity he was in charge of the engineering in more than 20 plants scattered throughout the East. In 1929, when the Rubber Company decided to consolidate the many smaller plants into several large ones, he supervised the construction of large additions to the Providence plant and the moving of equipment to it. He was chief engineer in Providence until 1932.

During these many years in the rubber industry, he made many major contributions to the engineering phase of the production of rubber goods. Factory buildings worth millions of dollars, the construction of which he supervised, are profitably used today. For several years he served as chairman of the National Committee on Safety in the Rubber Industry. From 1932 until the time of his death, he was a consulting engineer. He supervised the construction of many factory buildings in and around Rhode Island and engineered many power products among the industries of this section. At the time of his death, he was devoting his full time to the engineering of three Rhode Island firms: the Carr Manufacturing Corporation of Bristol, the Moore Fabric Company of Pawtucket, and the George C. Moore Company of Westerly. He was in the process of actively supervising the construction of a textile factory in the South as well as several plant additions in Rhode Island, when he passed away. John attended the annual reunion in 1944 and had planned to attend the 50th.

Your Secretary also reports with regret the death of Roland Stebbins, II, on December 7 at Springfield, Mass. Roland was more interested in applying science to fruit culture than to engineering. At one time he tried apple culture in the South and in Oregon, but his principal interest was in his farm at Williamstown, Mass. He lived for a time in France but returned home at the outbreak of the war.

Earle B. Phelps, until recently professor of sanitary science at the Columbia University school of public health, retired in 1944 with the title of professor emeritus. During the winter he has been located at the University of Florida at Gainesville as a part-time professor in the college of engineering, engaged in research. He is revising his book, *Principles of Public Health Engineering*, published in 1925. His other book, *Stream Sanitation*, came out in 1944. Earle spends his summers at his cottage at South Harwich, Mass., down near the "elbow" of Cape Cod, where his hobby is his collection of sea shells. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

#### 1900

Perry called me on the telephone in March on his way to a meeting of the Northeastern Wood Utilization Association at the Parker House at which he was to deliver a lecture on plywood. In the opinion of many, our Tom is regarded as near the top of the list of experts in these wooden matters. Allen has returned from Florida and spoke of having met Crowell at St. Petersburg during the winter.



A fine letter from Joe Draper in Palm Beach describes several miniature class meetings with Hapgood at neighboring Lake Worth and reads as if a good time was had all around. Happy is now retired from the De Laval Separator and living the life of Riley, just applying for new patents every so often. Joe is expected back in his office at the last of April.

A note from the South informs us of the death on April 3 of Harry Osgood at his home in Sarasota, Fla., after a painful illness. He had not been in good health since our last meeting at East Bay Lodge in 1945, and the loss of one of his sons last February hastened his end. The funeral was held at Lynn, Mass., on April 9, and Allen and the Secretary represented the Class. — A notice of the death of Willis C. Baker, VI, of Brunswick, Maine, on March 23 has been received from the Register of Former Students.

Last year, directly before the Alumni Banquet, the Class held a little meeting in one of the hotel rooms. Another such get-together is being suggested. If anyone is interested, please get in touch with the Secretary. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

#### 1904

Your volunteer class notes secretaries are functioning again this month, even though little attention has been paid to our appeal for news items. The only letter received was from Holcombe, II, and read as follows: "I was glad to see some '04 notes in the last issue of *The Review*. I sent some in twice last fall, but none got published. I am sure you fellows on the spot can get the stuff into print better than anyone this far away. Even if all you can report is retirements, it is better than the two or three death notices I had. I am on the Civil Service retired list myself, but I don't get enough out of it to pay room rent, much less eat, and I still have to work for a living. I note the proposal for a class gathering in June. I had not planned to attend the reunion this year; but if there is to be a real get-together, I will try to arrange it. I occasionally see Frank Milliken and Wheat, but I have not attended all the M.I.T. Alumni events recently because of too much work and pressure of other events and consequently am not up on their plans for June. Currier Lang and his wife stopped here overnight on their way home from Florida. He is still playing tennis and might take up golf again if anyone urged him. I play once a week with fair success."

In these days when so many in our Class are being retired, it is pleasant to mention a new bridegroom, in the person of Charlie Homer, who was married to Mrs. Doris Piper at Scarborough, Maine, on April 12. As these notes are being written, the newlyweds are touring the South, and by the time the notes are being read, they will be established in their new home in Scarborough. Congratulations, Charlie! And best wishes to you both.

Several Course III men were in evidence at the 75th anniversary meeting of the American Institute of Mining and Metallurgical Engineers in New York in March. Ralph Williams of the Metal and Thermit Company and Guy Riddell, who helps out Uncle Sam in Washington, were present, and also Hayward, who read a paper at one

of the sessions. Riddell is administrator of the industrial research and development division.

Merryweather, III, whose retirement from Bethlehem Steel was mentioned in the last edition of these notes, has been living the life of the well-known Mr. Riley and has spent some time traveling in Mexico. It is reported that Charlie Haynes, X, was seen in Boston recently and appeared to be his usual cheerful self. Cy Ferris says he will be in the Far West in June and will miss any prospective reunion. Cy is interested in a redwood forest and probably intends to keep physically fit by swinging an ax instead of a golf club.

A glance at the March number of the *Dartmouth Alumni Magazine* showed a resemblance to *The Review*. There were no notes from the Class of 1904. Let's improve this situation as far as we are concerned. We urge as many as possible to attend the Alumni Dinner on June 14. This would give us an opportunity to talk over class affairs and decide what should be done. If you can't be there, write us some suggestions. — EUGENE H. RUSSELL, JR., 100 Milk Street, Boston, Mass. CARLE R. HAYWARD, M.I.T., Room 8-109, Cambridge 39, Mass.

#### 1906

We are indebted to Percy Tillson for a clipping from the Harrisburg, Pa., *News* concerning P. A. Staples, who has recently been made president of the Hershey Chocolate Company. The clipping reads as follows: "Percy Alexander Staples, who says he's 'just a New England Yankee taking things in stride,' . . . took over the presidency of the Hershey Chocolate Corp., succeeding William F. R. Murrie. Staples, a member of the board since 1927, also was named chairman of the board of directors, in the company's annual reorganization meeting yesterday. The 63-year-old new Hershey president, who was left an orphan at 12, moved up to presidency from head of the Hershey Trust Co., the trustee for the vast Hershey enterprises, including the philanthropy for the Hershey Industrial School for Boys. Staples, graduate of . . . Technology, joined the chocolate organization 26 years ago and was named controller of the company's Cuban interests. As general manager, he rebuilt and reorganized six of Hershey's sugar and public utility properties in Cuba to a point where they produced more than three times Hershey's requirements for sugar in chocolate making. As president of the Cuban companies, a position to which he was named in 1927, he built 'Central Hershey' the Cuban counterpart of the town of Hershey, Pa. Staples was born in Portland, Me., March 31, 1883."

In the April issue we referred to Frank Benham's retirement and his trip to Florida with Mrs. Benham. Under the date of March 24, the Secretary received a letter from him on the stationery of the Brick House Tavern at Williamsburg, Va., which accompanied a notice taken from the *Washington Post* of that date reporting the death of R. D. Bradbury. Bradbury died on March 21, at his residence in Washington. The notice included the information that he was the father of Major John D. Bradbury and Mrs. L. D. Chambliss. Frank also said that Bradbury was a Course I man, a

transfer from some other college, and that he had stayed at the Institute awhile after graduation as assistant to Professor Swain.

A note from Ralph Patch dated Winter Park, Fla., March 25, reported the arrival of the Philbricks. Ralph left Florida on the 31st of March and arrived in Stoneham about the 9th of April. — *The Bell Laboratories Record* for April included a photograph of a luncheon given to R. S. Hoyt, honoring his completion of 40 years' service with the Bell System. Seated at Hoyt's right was O. B. Blackwell. The date of the anniversary indicates that Hoyt has been in the telephone business since leaving the Institute.

W. N. Messenger, VI, passed away on March 25, at Melrose, Mass. He, likewise, has been in the telephone business since graduation. At the time of his death he was doing traffic engineering work in Boston. He is survived by his wife, Mabel Burnham Messenger. — JAMES W. KIDDER, *Secretary*, 50 Oliver Street, Boston 10, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

#### 1907

News regarding '07 men is practically a minus quantity with me for these notes. Herbert Sullwold wrote in March that he is still in plant engineering work at Hughes Aircraft Company where he "uses a little architectural knowledge once in a while." His address is 823 South Bundy Drive, Los Angeles, Calif. — Ralph H. Hall has a new address at 49 Francis Avenue, Newington 11, Conn. — And that's all!

Our treasurer, Harold Wonson, as of April 8 had received \$435 from 142 men in payment of class dues, a sum which is well ahead of any previous collection — a tribute to his effective persistency and to your generosity in response. And the mention of Wonson's name reminds me of one other very important piece of class news — his older daughter, Marcia, presented him and his wife with twin girl grandchildren on April 5. This gives Marcia five children, one boy and four girls. Now the recording of grandchildren makes it fitting for me to state that on this very day, April 22, Mrs. Nichols and I became grandparents for the fifth time, our son Edward and his wife having had their first son born this spring morning.

Referring further to class financial matters, our record in gifts to the M.I.T. Alumni Fund for the fiscal year ending March 31 was just a little better than for the previous year in amount given. Our total was \$3,637 — 140 per cent of quota — as compared with \$3,457, or 131 per cent of quota, for last year. One hundred and fourteen men contributed this last year, 102 per cent of quota, against 120 men for 1945-1946. If the six men who did not contribute this past year had given the same amounts as in the previous year, we should have totaled almost the \$4,000 for which I had hoped. You men who read this, and you are the men who gave, did a good job, however. Thank you, as class agent and in behalf of the Alumni Fund board. Only nine classes gave more than we, and at least four of these had especially large gifts, while the largest single contribution by an '07 man was \$500.

It will be only a few days from the time you are reading this to June 20, when our

40-year reunion at Oyster Harbors Club will begin. I wish I might be able to sit down and talk personally with you who have not yet sent me your registration slip and check and impart to you something of the enthusiasm that I feel about this event. Don't hesitate any longer. Consider the genuine pleasure that will be yours by meeting for two days with your old mates in a beautiful place amid delightful surroundings. This may be your last opportunity ever to enjoy such an outing. Look over again the literature I have sent to you, and send me your favorable reply now. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WILSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

### 1909

From Paul: Tom Desmond, I, New York State senator at Albany from his district up the Hudson, keeps getting his name in the papers, and often his picture. Here's the Boston *American* of March 14, and there is a picture of our Tom in a poor, old, broken-down jalopy that is plastered with campaign posters. The only good thing about the picture is the familiar grin on Tom's face. He was campaigning for better inspection of cars in New York State. One of the signs told the onlooker that such cars as he was driving were now licensed in New York State and that when they were ruled off the roads, deaths from motorcar accidents would be halved! Tom is always working on some good measure.

Chet Dawes, VI, was in town the other day to attend one of his esoteric A.I.E.E. meetings. I had the comfort of lunching with him and, as always, I did not see him long enough to get much of any lowdown on his book-publishing activities. Chet, you know, has published several books on electrical engineering, but he is such a modest bird that you just have to dig for any tidbits like this one. For his publishers have recently told him that his Volume I was their fourth best seller in 1946 in its special line; and Volume II was 13th. The letter concludes: "Aside from the author of our surveying books, you were the only author to appear twice on a list comprising 25 leading titles." And that, classmates, is no mean praise! More power to you, Dr. Dawes!

Recently, in an unguarded moment, I may have dropped the remark that I often meet familiar faces in New York. The other day I met our handsome Vice-president, Jimmy Killian, down there by the corner of Broadway and Wall Street. He was escorting the Institute's Assistant Treasurer, Joseph Snyder, among the narrow streets of the financial district. At that very spot a few days later, I had been making a call below the Morgan corner and was on my way up to the faithful subway. A cherubic and pink-cheeked, blonde young rascal caught my eye. And lo! it was none other than Carl Gram Junior. I was reminded of Wollaston and golf and of Oyster Harbors and good company, and the South Shore. Carl now lives here in New York, but I took the opportunity to ask how the lambs were doing out in Lancaster County, Pa., on the Gram Farm. "Very well," was the answer, and may the 1947 crops in that beautiful farm country thrive in this troubled year!

Your Review Secretary has been assigned the task of supervising the revision of the American Standards Definitions of Electrical Terms and has 17 subcommittees working and co-operating with him. He is pleased to report that, independently of him and because they are recognized authorities in their respective fields, three '09 men have been selected by subcommittee chairmen to assist in this highly important work. George Gray, VI, who is with the International Standard Electric Corporation, is a member of the subcommittee on electrocommunication; E. Q. Adams, X, who is with the Nela Laboratories of the General Electric Company at Cleveland and has done much on illumination standards and definitions, is a member of the subcommittee on illumination, and George Reppert, VI, who is with the Otis Elevator Company, is a member of the subcommittee on electromechanical applications. George has already made many important contributions to standards and definitions relating to the elevator industry. Also Reg Jones, VI, is vice-chairman of the A.I.E.E. standards committee to whom we all must eventually report, and the chairman is grateful to him for having placed so many of the Bell System resources at his disposal.

We are more than pleased to hear from Clarence Reeds, II, who is now at Oklahoma City. As many will recall, he came from Norman, Okla., and is still in that state. "I note from your letterhead," he writes, "that you have moved from M.I.T. to Harvard. I presume, if I had been reading the class news, I should know all about it, but it happens that I have not kept up with many of the class activities. About 15 years ago I got back on the farm, which is our family homestead, and have been trying to do a little dirt farming. It wasn't long after I returned here that my neighbors recognized an easy mark and began to load things on me to do outside of my own work; I have thus been dabbling in organizations having to do with agriculture, such as the Agricultural Adjustment Agency, for which I serve as committeeman, and Oklahoma Crop Improvement, an organization which controls the distribution of certified seeds in the state. The Rural Electrification Administration has taken no small amount of my time during the past five years since I replaced an earlier trustee in my district for our local project. I have been very much interested in this endeavor because the electricity to farmers, particularly in Oklahoma, has been of tremendous value, and I have tried to keep up with the trend of the times in helping my neighbors get the service. Although at the present time, Oklahoma has one of the lower percentages of farms electrified, the movement has grown very fast since it was started, and so many people are demanding electricity now that it is practically impossible to keep them pacified while we are waiting for materials with which to extend the lines. Our only child, Clarence, Jr., now 24, after being released from the Army, where he served two years, is here with us, and we do the farming, and he also has a farm repair shop for the care and maintenance of equipment. I am pleased to have heard from you, and send best wishes to you and all the members of '09." — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N. J. CHESTER L. DAWES, *Review*

*Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 285 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

### 1911

Once again hearty thanks to you all for the fine way you again came through in Alumni Fund VII, proving that 1911 is always a consistent performer. Last year we had 155 subscribers (124 per cent of quota) subscribing \$5,342.50 (186 per cent of quota). This year we had 151 subscribers (125 per cent of quota) who have subscribed \$5,495.50 (196 per cent of quota).

Congratulations to Ralph Adams, II, who on the second day of spring, 1947, married Mary Dorcas Winslow, daughter of Mrs. Dorcas Soule Winslow of Beach Bluff, Mass. It's also a pleasure to record another junior 1911 marriage, Zim Zimmerman, IX, announces from New York the marriage of Anne B. Zimmerman, daughter of Mr. and Mrs. Rufus E. Zimmerman of Short Hills, N.J., to Nelson O. Price in Calcutta, India, on March 22. Mr. Price, the son of the late Bliss Allison Price and Mrs. Myron W. Adams of Boston, is a member of the sales organization of the Standard Vacuum Oil Company of India, and during the war he was a captain of infantry in the American Division in the Pacific theater of operations. After a trip to Darjeeling, the couple will reside in the city of Calcutta.

Writing from Glendale, Calif., where he and his family went four years ago, Oliver Powell, XI, wrote of an Army Week luncheon in near-by Los Angeles on April 11, where the principal speaker was our own General George Kenney, leader of the Army Air Forces Strategic Command. O. D. reports that his wife's asthma, which had come to be very serious during their years in Auburn, N.Y., has improved wonderfully in four years in sunny California. Their son, Bob, starting in the V-5 program, got his wings as a naval aviator at Corpus Christi, Texas, in 1944, but being in the top 10 per cent of his class, "was condemned to be an instructor in basic and instrumental flying for a year and never got out of this country." He has just completed the equivalent of two years of college at Glendale College and plans to complete his course in business administration at the University of California. Their daughter, Louise, was graduated from high school in June, 1945, with high honors and is in the last semester of her sophomore year at Knox College, Galesburg, Ill., where she is majoring in music. "I hear occasionally from Howard Ireland, XI," writes Powell, "who is still in Auburn, N.Y., with Dunn and McCarthy. His son and both daughters are married, and he is a grandfather. I do hope to get back to central New York, yes, also New England sometime soon, and who knows, maybe I'll make a reunion yet!"

He enclosed a clipping from the Los Angeles *Times*, featuring a fine candid shot of George Kenney, I, who "warned a thronged Army Week luncheon that America will be the No. 1 target in the next war, adding that if we get into trouble again, the attack will probably come over the shortest air routes from the European-Asiatic land mass across the North Polar Basin. This may come," he said, "before



we recover from the shock of seeing our major cities wiped out by a comparatively few loads of atomic bombs, superexplosives, superincendiaries, or whatever means of mass destruction happens to be in vogue at the time." Declaring that this picture is real, he called for constant alertness to possible attack and strong nation-wide support of a greatly increased air arm which features the newest developments in weapons of modern warfare. "My job is to defend this country," he said. "I'm supposed to be an expert at it. To do my job, I have to assess all factors involved and make recommendations accordingly. If I see bad weather ahead, it is my duty to warn the people for whom I am working." Continuing, George said that "our whole Army is rapidly getting to be capable of being transported by air, with all equipment being redesigned for that purpose and aircraft designed to move and supply ground as well as air forces on a scale greater than ever before." In a final note of warning, George said that "push-button warfare, which has caught the imagination of the American public, must not be set up as our Maginot Line, behind which we think we can sit secure and push a few buttons or throw a few switches and ward off attack." Four days earlier at Washington, George had disclosed that the striking power of his globe-ranging bombing fleet will be intensified shortly with first deliveries of two new-type superbombers — the Boeing B-50, a modification of the wartime B-29 Superfortress, and the huge B-36, capable of ranging out 5,000 miles from base and, presumably at somewhat shorter range, of carrying 30 tons of bombs. Asked whether the Strategic Air Command would be ready should war come now, the veteran replied: "With what we've got, we would make a damn good showing!"

In a Laymen's Sunday address at St. Paul's Methodist Church, Lynn, Mass., on April 13, Carl Ell, XI, President of Northeastern University, said that the faith that built the American democracy will conquer even greater problems today and in the future. "We are apt to lose our perspective," he said, "and become discouraged by the magnitude of our task when we look about us today and see the problems of peace that include racial and religious intolerance and the local betrayal of public trust from time to time. Yet, we have seen what the power of faith can do in building individual lives, in building a democracy with freedom for all, and in freeing people from tyranny."

Class President Stevens writes that the Okonite-Callender Cable Company is as busy as the proverbial bee and with enough copper would be still busier. "We hear lots of talk about recession," he writes, "but we don't see any real signs of it as yet. I have access to three or four prime sources of information, similar to Babson, and all I can say is that all differ, and everybody seems to be all mixed up, and nobody has the courage to say that a depression is on the way. Historically speaking, there has always been a depression after every war, and I think that, plus the never-ending demands of labor, is what is getting the prophets down. Some time in late April, I shall be pulling out for the Miramichi . . . my third annual Atlantic salmon adventure in New Brunswick."

With characteristic good nature, Ted Van Tassel, X, wrote from the Deaconess Hospital, Boston, on March 26: "I came in for a spring overhaul. I think they rebored the cylinder, scraped the carbon, renewed the valves, and expect improved performance. I have been here a week, and they say I may go home in another week." More power to you, Ted!

Here's a final reminder that Saturday, June 14, is Alumni Day at M.I.T. See you there! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## 1914

Regretfully, it is necessary to report the death of another classmate, and again presumably from a heart attack. Karl C. Mason died at his home in East Bridgewater, Mass., on March 17. For the past 20 years Karl was general superintendent of the Brockton Edison Company, with which organization he had been associated practically all the time since graduation. This utility is a Stone and Webster-managed company, and except for a period of less than two years in the Twenties when he was transferred to one of the other companies at Halifax, Nova Scotia, Karl has been a resident of the Brockton area ever since graduation. He was active in community affairs, taking part in the local Community Fund, Red Cross, and Masonic activities. He was a trustee of the East Bridgewater Savings Bank. He is survived by his wife, a son, David M. Mason, an Army private, now in Europe, and a daughter, Carol. Karl came to the Institute from Keene, N.H., and was active in numerous undergraduate affairs, including singing in the Glee Club and taking part in the Tech Show.

Much like shortages and rising prices, the effects of war conditions on individuals seem to have intensified in the early post-war years. Not only has this appeared evident through the loss of several of our classmates during the past two years, but also from those who have had to slow up recently in their business activities. One of the most severe cases that has come to your Secretary's attention is that of E.L.O. Patten. Bob, who was never particularly rugged, has been with the General Electric Company at Chicago for many years designing industrial heating equipment, particularly large baking units. The Bureau of Ships of the Navy asked that he be released by G.E. for duty in Washington during the war. Here he was responsible for the design of the galley equipment for the tremendous naval expansion program, extending actually from submarines to the U.S.S. *Misouri*. Apparently as the result of overwork, Bob has had a heart attack and also pneumonia. He is currently at the Hines Hospital (of the Veterans Administration) at Hines, Ill. It is understood, however, that he expects to be transferred to Phoenix, Ariz. Bob's home address is 712 Lyman Avenue, Oak Park, Ill., and he would be very happy to hear from any classmates.

Somewhat more fortunate is Jim Reber, who, as vice-president in charge of manufacturing for the Columbian Rope Company, carried a tremendous war load. Jim's physician has insisted that Jim take very

decided steps to rest and regain his health, even to the extent of resigning as vice-president of Columbian. He is, however, continuing as a director of the company. Jim is following the doctor's advice and with Mrs. Reber spent two months in Florida and is planning a two months' trip to California this summer.

At a Research Day program held in Boston on March 28, your Secretary met Harry Keating for the first time in many years. Harry is director of research for the Smith Paper Company of Lee, Mass., which is only a short distance from where Skip Dawson is located, also associated with the paper industry. — The March 17 issue of *Chemical and Engineering News* described a new odor standard kit known as the Crocker-Henderson Kit. By means of it it is possible to classify all odors in a 32-digit system. This simplicity must be a great help in cases where people are short of adjectives to describe some conditions. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

## 1915

Final score in Alumni Fund for last year: 157 of you (103 per cent of 153 quota) gave \$3,156.50 (90 per cent of \$3,500 quota), an average of \$20.10. You did well, and many thanks to you all, but it was not quite enough to put us over the top. Just add a little bit to last year's contribution, and send it in early. Let's get old 1915 back in the 100 per cent bracket.

Kebe Toabe, his wife, and his older son were recently in Boston, and I had a delightful visit with them. Kebe's youngest son, wounded twice in Marine invasions in the Pacific, is now in good health and making a fine showing on the track team at the University of Wisconsin.

Many of you who remember Hamilton Frazine at our 25th reunion at Oyster Harbors will be sorry to know that he has been reported in very poor health. Gene Place has been tracing him since he left Cincinnati, but we've been unable to locate him.

Recent news releases call for congratulations to the two classmates concerned, as follows: "A luncheon was given at Western Electric Kearny Works in honor of John S. Little, 50 Canterbury Lane, Westfield, Mass., who is superintendent of manufacturing engineering in charge of A.C. cable and wire engineering. Mr. Little has been with the company for twenty-five years. He is a member of the American Chemical Society."

"Foreign correspondence and export sales of Detrex Corporation have been placed in the hands of Henry J. Lucey, sales manager of the oil-extraction division. His additional duties will place Mr. Lucey in complete charge of following up foreign inquiries and sales in all of the company's three major divisions: industrial metal cleaning, dry cleaning and oil-extraction. . . . Mr. Lucey came to Detrex in July 1944 from Washington, where he was with the W.P.B. in charge of allocating chlorinated solvents. At one time, he was vice president of Curtin-Howe Corporation, a subsidiary of Westvaco Chlorine Products Corporation. Mr. Lucey is a member of the American Society of Oil Chemists."

Send your Alumni Fund check — put 1915 over the top this year, and thereby "help Azel." — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

## 1916

While visiting my father recently in Florida, I found that he has spent several winters at Altamonte Springs with Jack Stafford's father. Jack is reported currently on a business trip to Mexico. I understand that Jack is manufacturing sugar refining machinery at Newburgh, N.Y., and am writing to him for additional news for our next issue.

Hovey T. Freeman, President of the Manufacturers Mutual Fire Insurance Company, is a member of President Truman's Co-ordinating Committee on Fire Prevention, but denies having furnished the picture which we received. Hovey also denies that Harry made a democrat of him, in spite of our documentary evidence, and furthermore refuses to enter a beauty contest with America's best-dressed man. The committee is arranging a conference to be held early in May to initiate a nation-wide effort to reduce the appalling annual fire toll, which claims so many lives and causes such great property destruction.

Here is a report from Frank Hubbard, who says, "I am still living at Great Neck on Long Island, where I have now been for nearly 10 years. My wife and I have no children. I am still in the airplane business, and the company with which I am associated is both manufacturing airplanes for the U.S. Navy and reconvertng and overhauling airplanes for the different air lines. We have our manufacturing plant at Valley Stream, Long Island, and our reconversion and overhaul plants at Bradley Field, Windsor Locks, Conn., and Miami, Fla. I am sticking to the manufacturing end and am manager of the Valley Stream plant (Aircraft Service Corporation). My hobbies are still athletics (watching the other fellow do it) — baseball, football, track, and hockey, along with a little bowling, which I try to do myself. With a little luck I shall probably be doing the same for the next five years, besides looking forward to the next reunion."

A letter from Ed Weissbach gives us the following information: "I ran into Johnny Fairfield last December at the Power Show in New York. Johnny looks the same as ever. He is, I think, a full-fledged professor of heat engineering at Rensselaer. Sometimes I envy the calm, academic life that professors have with no labor problems as such to worry them. At least, that is what we think. I visited Spencer Hopkins' family in Onancock several years ago. They had an ideal place there on the eastern shore of Virginia, ideal for fishing, hunting, sailing, etc., with Chesapeake Bay right at their back yard."

Then from Johnny himself came this message: "I am very busy refurbishing laboratories and courses to take care of a 120 per cent increase in student body, and have the same hobbies — gardening, reading, swimming, and rural scenery. I have a daughter getting her master's degree in physiology at Rochester and a son who is a sophomore in engineering. There is no news, although in the last year I have heard from John Eberhardt, Jimmie Evans, Harold Gray, and Ed Weissbach."

Bill Dodge in Asheville sent us a complete history of his activities for the past 30 years. The following excerpt gives a good account of his interests: He returned from Paris in 1919 after being wounded, gassed, and hospitalized, to help redesign Michelin Sight. After a hospital stretch, he taught physics in the Asheville School for Boys and then in 1924 he started hand-wrought silver work and the practice of architecture. He continued with the silver until 1943 when other work demanded his full time. His firm is Six Associates, Inc., engineers, formed in 1941. He was first president, then later, secretary-treasurer. He built Army hospitals and medical training centers in North Carolina, Georgia, and Tennessee, airfields, and so forth. Since the war they have built primarily industrial plants, water, and waste disposal systems, power plants, and some commercial and residential design. He is married and has a daughter, Nancy (Mrs. Peter G.) Holloway, and son, W. D., 3d, a freshman at William and Mary.

We were glad to hear from Duke Wellington, as follows: "Receiving The Review in the mail yesterday reminded me to finish a letter to you that was interrupted. When first out of Tech I shifted about from one company to another rather fast. In 1918, I went with the Wallace and Tiernan Company, Inc., now of Newark, N.J., who manufactured chlorine control apparatus. In 1924, I became affiliated with the New Haven Water Company as superintendent of chlorination. In 1935, I became their sanitary engineer and still hold that position. The best way to explain my duties is to say that I am the guardian of the rain-drop from the time it falls to the ground until it comes out of the faucet. This is some task, as it takes a lot of raindrops to make 32 million gallons a day. They can also fall on a hundred square miles of ground. The results of some of my doings may be seen in two articles which have been written recently in conjunction with Dr. Jacobson and have appeared in the journals of the American Water Works and the New England Water Works Association. Because of the housing shortage, my oldest daughter, her husband and three children, are living with me. This is a break, for otherwise I should be all alone, as Mrs. Wellington died three years ago. My next daughter is affiliated with the Young Women's Christian Association in Syracuse, N.Y. My son will be graduated from the West Haven high school in June, and on account of the college situation, he will enlist in the Coast Guard this summer. Although there are a few '16 men in this district, I don't see much of them, as they do not appear at the M.I.T. Club meetings as they should. In the winter, to keep in shape, I am a bowling fiend. The summer brings me to my best times, when I sail. I have sailed out of Larchmont, Southport, and Pine Orchard. I shall be back at Southport this summer. For those who know boats, I have sailed the following: Buzzards Bay knockabout, Atlantic, Marblehead-Buzzards Bay Class known as the MB's; and this summer it will be the Lightning Class. Since I'm no friend of the typewriter, someone will have to use the blue pencil on this."

We've had some very interesting notes from Mark Lemmon, who has been doing

architectural things in a big way down in Dallas, Texas. Here is what he says: "I have been plugging along down here as an architect for 20-odd years and hope to keep at it for a few more. I came back to Texas after graduation from Technology because I am a native son, and because I felt that Texas presented the greatest future for a young architect — thoughts which have been borne out as far as I am concerned. We are exceedingly busy, having many projects on the boards, some of which are most important in our community. For instance, I am consulting architect to the Dallas board of education, which has a building program under way valued at \$10,000,000. We are also the architects for Southern Methodist University here in Dallas, for whom we have done several million dollars' worth of building and are busily doing others. I have two grown sons; the older one will finish at the University of Texas medical school in Galveston, Texas, in 1948, his education having been slowed up by service in the Navy during the war. The other son will be graduated from the United States Naval Academy at Annapolis during the coming June. As for hobbies, I have only one, and that is golf, with which I struggle very unsuccessfully, but with great enjoyment. It has been a great regret to me that I have been so far away from most of you men who were in my Class. In fact, the only member I ever see is Tom Holden, who is president of the F. W. Dodge Corporation. He is a Texan and gets down this way once in a while. I thank you again for writing to me and wish you and all the 1916 men the best of luck."

The following excerpt is from a letter of Chester F. Lewis to Beverly Dudley '35, Editor of The Review: "While in Europe in 1944 and 1945, I was in a Civil Affairs detachment located in Luxembourg for about one year. We worked in close association with the Government of Luxembourg, assisting it in many ways during this period. Almost a year after returning to this country, I received through the War Department notice that I had been awarded the Degree of Officer in the Order of Civil and Military Merit of Adolph of Nassau by the Government of Luxembourg. I am not aware of the full significance of this award but accept it as evidence of that country's appreciation of the efforts of our Civil Affairs detachment, as a unit of the Army, to assist the Grand Duchy of Luxembourg."

Trying to get Walt Binger to put down on paper some of the important things he contributed to the war has been like pulling teeth, but at last he has succumbed and here is his interesting story: "The year 1940 found me the commissioner of Borough Works of Manhattan in charge of the design and construction of the East River Drive and Commercial Marginal Way, the extension of the West Side Elevated Highway and other big Manhattan vehicular projects. In the autumn of that year, the president of the American Society of Civil Engineers asked me to undertake the study of civilian defense. That was the year of the great blitz in England, but little more of civilian defense was known in the United States than what could be gleaned from such items as pictures in the then existing rotogravure sections of the Sunday papers. On my recommendation, the Na-



tional Technological Advisory Committee was created, with one member from each of the great engineering societies in the country, and the Secretary of War appointed me chairman. In September, 1941, the War Department flew me by Liberator bomber to London, where I spent a month as expert consultant to the Secretary of War in the office of the military attaché of the Embassy. The immediate result was a 20,000-word report on the engineering features of civilian defense. The flight home was memorable in that in the dead of night we were almost brought down by taking on three tons of ice. We had on parachutes for six hours and, before we had retraced our steps from Canada, we were off our course in Labrador on our way back to Gander, Newfoundland. After 18 hours in the air, we put down there with a radio which had been dead halfway across the Atlantic. The pilot told me we could have flown from Prestwick, Scotland, our port of embarkation, to Kansas City in the distance we covered. There being no prohibition in my official position against carrying on private practice, I formed a limited partnership, or what the War Department called a joint venture, for the design of projects for the Army. It was known as Binger-O'Connor-Orrok, Architect, Engineer, and consisted of me as civil engineer, an architect, and a power engineer. We were kept busy doing confidential or highly secret work for the Corps of Engineers during most of the war, including such items as camouflage and splinter protection of large airplane engine factories, and port development, all of which was actually built; while others may even yet not be mentioned in print. Still chairman of the War Department's committee, I was recently summoned to Washington to give advice on civilian protection against new weapons. In 1945, about six months before the end of the La Guardia administration, I resigned as a city commissioner to become vice-president of the City Investing Company. This is one of the country's largest real estate and construction corporations, and I am in charge, among many other things, of design and construction. I again flew to London last year to learn about radiant heating, and that system has been incorporated in two 15-story apartment houses which we are building in Manhattan. For several years I have been a member of the Visiting Committee of the Department of Civil and Sanitary Engineering at the Institute, a job which I take seriously. We spend two days each winter in Cambridge and have another meeting in New York. The last one took place recently from ten in the morning until three in the afternoon and included the new Head of Civil Engineering, Professor Wilbur, as well as Vice-President Killian, and Dr. Compton. My interest in extracurricular engineering matters continues, and as chairman of the committee on admissions of the American Institute of Consulting Engineers, I recently had the pleasure of passing favorably upon Executive Vice-President Moreland '07 of M.I.T., and Professor Breed '97 is about to be proposed. My English friends, with whom I have done such concentrated engineering work, honored me by electing me to the Institution of Civil Engineers. I retain my fondness for cross-country riding. Although

it was given up after Pearl Harbor, I recently began riding to hounds again and hope to keep it up until I am 80. My son is a third-year boy at Exeter. My second daughter is a junior at Bryn Mawr, and an elder daughter was graduated from the same college (as was my wife). She is married and living in Cambridge, where her husband is a first-year man at the Harvard Law School, which he entered after several years in a destroyer. On June 1, I shall celebrate my 25th wedding anniversary, and of all things that are hard to realize, that is the hardest."

A clipping from the *Townsmen*, Wellesley, Mass., tells of Arthur K. Wells' appointment as corporator of the Newton Savings Bank. The article reads as follows: "Mr. Wells needs no introduction to the citizens of Wellesley, having served as Tax Collector since 1929, and as Treasurer as well as Collector since 1937. Mr. Wells was born in Wellesley on March 9, 1894, and was educated in the Wellesley public schools and at . . . Technology. After leaving M.I.T. he spent six years or so in factory management and cost accounting work in various parts of the country. Then came a year with a municipal bond house. He followed this with five years in real estate management and accounting before becoming Tax Collector in 1929. Eight years later he was appointed Town Treasurer as well."

"Queried about his 'outside' activities, Mr. Wells says 'Mrs. Wells and I seem to get involved in almost every drive that comes along, but so does everyone else,' adding, 'Collecting taxes is a community activity all by itself.' Mr. Wells is a member of the Wellesley Lodge; Chairman of the Finance Committee of the Unitarian Church; and a past president of the Massachusetts Tax Collectors and Treasurers Association, and currently chairman of its committee on legislative matters before the General Court. He and Mrs. Wells are the parents of four children: Arthur K., Jr., 24, twins, John B. and Alice C. Wells, 23, and Peter T., 10. They make their home at 71 Kingsbury Street, Wellesley."

The response from the members of the Class to our requests for news has been very pleasing. Next month will be the last issue of *The Review* for this season. We hope all of you who have not written to us recently will do so promptly. — RALPH A. FLETCHER, *Secretary*, P. O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N. Y.

#### 1917

Lucius T. Hill was recently elected president of the Home for Aged Couples in Boston. — Ralph H. Sawyer of Warren Road, Framingham, has become works manager of the Lombard Governor Corporation. He has been associated with the Lombard Corporation for seven years and is a former president of the Framingham Chamber of Commerce — William H. McAdams has been nominated as chairman of the Faculty at the Institute for the academic year beginning in August, 1947. McAdams is professor of chemical engineering and has been associated with this department since 1919.

It is undoubtedly not newsworthy to record here at this date that Lewis W.

Douglas has been named ambassador to Great Britain and that he assumed office in early April. Before coming to the Institute, Douglas was graduated from Amherst College. He served for a time in the Arizona legislature and was elected to Congress in 1927. He served briefly as director of the budget in the early days of the Roosevelt administration and was later vice-chancellor of McGill University in Montreal; still later he was elected president of the Mutual Life Insurance Company of New York. During the war, he served as a deputy administrator of the War Shipping Administration.

In mid-April, Linwood Noyes was in Boston en route from Florida to his home and business in Michigan, from which he has been absent since October. He has completely recovered from the illness which forced him to rest during the winter and promises to join us at the Wentworth on June 6. While in Boston, Lin was staying with C. C. Taylor, who will be well remembered as an instructor in gunnery by those members of our Class who were at the Second Training Camp at Fort Monroe, Va., in the fall of 1917, as second lieutenants in the Coast Artillery Corps. It is reliably reported, also, that Lin saw Rudy Beaver and others during his Boston visit, though details of the meetings are at this writing lacking.

Your Assistant Secretary is pleased to report that he watched two sons of 1917 contribute largely to the 11-1 defeat of Andover by the Boston Lacrosse Club on April 19. These are Jim Anderson's son, Doug, who was graduated from Harvard in 1942 and subsequently had a distinguished record as a naval flier, and Phil's son, Bob Hulburd, who is a graduate of Princeton in 1943, a lieutenant in the Naval Reserve, and currently a master at Middlesex School, Concord, Mass.

The following is a communication from Rudy Beaver, maker of surgical instruments, acting in the capacity of special deputy of the class secretariat.

The boy who gets the most publicity in New England is Lush Hill. The papers say: "Mr. Hill has been appointed director of housing for the John Hancock Mutual Life Insurance Company. He will supervise the activities of the company's department of housing, which includes Hancock Village in Brookline and West Roxbury — a garden village of 789 individual homes which is designed to relieve to a considerable extent the severe housing shortage in Greater Boston. Mr. Hill also will direct the investigation and development of other enterprises of the John Hancock throughout the nation." The *American City* for January says the houses will be for single families and composed of three to five contiguous units, with a central gas heater in one of the units. The papers also say that "Mr. Lucius T. Hill is president of the board of trustees of the Children's Museum, Jamaica Plain." And further, the papers say — "Lush Hill is a trustee of the Boston Lying-In Hospital." His fellow trustee there is Jim Killian '26, Vice-president of M.I.T. Stan Lane, in the shoe business, is also a hospital trustee, of the New England Baptist Hospital. The shoe business reminds me that Bob Erb, now of Nashua and Manchester, N.H., Boston, and New York, is president of a big outfit of

many factories, making Thom McAn and Enna Jettick shoes, I believe. For all I know, he, also, may be a hospital trustee. This chain reasoning brings us to Bill Rausch, also much in print. He got to be so good at prefabricating houses that he has been promoted from president of his venture to consultant.

Chris Bertelsen '22 is the entrepreneur. He has been king of shipbuilding, liquor (making or distributing), and weapon making. He is now on the way to becoming mica king of the world. Heinie Gartner's gold mine is making metal clad doors. His daughter Jean is a classmate of my daughter Cynthia at the University of New Hampshire. Jean will be the cause of Heinie's becoming a papa-in-law in September. Elizabeth, his eldest, a graduate of Middlebury, is after a master's degree at Columbia and will be in Norway this summer for an economics course. The youngest, Louise, will enter Oberlin in the fall.

To finish my own biography: my son John, after Mount Hermon, is at Chauncey Hall preparing for M.I.T. this fall. And just imagine: he is getting calculus in a prep school! Times have changed.

"With both Blanchard and Lunn on the slate and Lobdell holding the office of executive vice-president, the question might well be asked, 'Is the Class of '17 trying to run the show?' I think you have to adopt the attitude that you can't keep good men down." The preceding passage is out of a letter from Al Lunn. He will be vice-president of the Alumni Association; and Ray Blanchard, president. I am proud. Phil Hulburd's son Bob was married on March 22 in Baltimore to Helen Cole Green. They now live in Concord, Mass., where Bob teaches French and German in the Middlesex School. Phil's daughter Lucy came over from England for the wedding. She is Vassar '41 and Harvard (B. Arch) '44, and is currently working in London as a junior architect for the London County Council (Hospitals and Housing Divisions). Lucy returned to England on April 11. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

## 1918

As your scribe endeavors to reflect logically on the items at hand, the New England weather is producing an April 20th snowstorm, which leads us to go whooping into analysis in several directions. For one thing, when the British took their historical walk out Concord and Lexington way on a former April 19, the appleblossoms were out. It has happened twice since then, once in 1905. Approaching the subject from another direction, outside it snows as these sentences are carpentered, but when you read them it will be June, all of which inspires us with a statistical mood of wondering who was 1918's first grandfather. (If you don't get the symbolism, burn some chicken feathers on the night of June 3 when the moon is full. That should shed light on the parallelism!) Our own candidate is Paul Howard. If we remember rightly — and we do because we looked it up — he had the class baby, one David Wheeler Howard, himself the father of David Stewart Howard, born

on March 6, 1942. Was anyone else wakeful in an earlier dawn over the agitating prospect of being a grandfather? If so, we'll award him a prize of one square yard of artificial leather (blue for a boy and pink for a girl) manufactured by the Weymouth Art Leather Company, of which Paul is the president. You should see how artificial leather is made. Within the limits of our own simple powers of analysis and description, it is simply a process of painting cloth, and then embossing it. Incidentally, Ira Young of our Class — or was Ira in a class by himself? — is on Paul's staff, probably immersed in the mysteries of subdivision or some more appalling type of calculation, and always coming up with the right answer as in the days of yore.

June may be no time to move, but April is when people think about it, which is one reason for Frank Creedon's bursting into print again. The Brockton, Mass., *Enterprise*, with an eye to firing a linotype cannon or two in honor of a home-town boy, says, "Frank R. Creedon, national housing expediter, is a top-ranking engineer as proved by his record . . . but so was Herbert Hoover and yet Mr. Hoover was no match for adroit politicians. Mr. Creedon, out of Moraine street, BHS and MIT, went before Congress to talk of home building prospects in 1947 . . . more especially housing within the means of World War II veterans. News he transmitted wasn't good — costs continue to increase; scarcities have not disappeared; the building of new homes and apartments, has not gone forward at the expected speed . . . though the situation will go from bad to worse if government financial aids are cancelled. What Frank Creedon did not mention, though aware of it, is this . . . with a presidential election approaching, the GOP majority in Congress is not eager to co-operate in solving the housing shortage and making Mr. Truman and his administration look good in 1948."

A famous German philosopher once said that the principal tool of the politician is a lie. A member of the present administration at Yale University has said that most professors feel they can be as hypocritical as they like as long as they are genteel. Alas, neither statement helps out the poor scribbler of class notes who tries to make people happy by recording the truth. All this reflection stems from the fact that Jim Flint's remark, quoted word for word in the April Review, caused a fellow townsman in Columbus, Ohio, to call Jim up for corroboration. As though anybody wouldn't know by inspection that Jim, too, was telling the truth! In a somewhat chaotic state of mind we got in touch with Jim about this and asked him for a statement. The untamed imp in us, as well as the honest reporter we may say, prompts us to record his exact words again, each meticulously written down as they fell from his unsuspecting lips. "Just don't say anything about me this time. Just skip it." We hope he will not try to throw the Baldwin Locomotive Works at us for our devotion to truth and what is professionally referred to as "complete coverage."

— GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## 1919

The New York group of the Class held a dinner at the Winthrop Hotel, on April 22, in order to meet with K. T. Lee, XV, who was here for a very limited stay after 29 years in China. He is general manager of the China Chemical Works, Ltd., in Shanghai. The account of this dinner will appear in the next issue of *The Review*.

Albert Reynolds dropped a note from Morristown, N.J., with the item, "No news." — Arklay S. Richards writes as follows: "The Arklay S. Richards Company, Inc., is still making thermocouples and everything that goes with them. We have lately put on the market a new type of thermocouple for heat-treating work which gives closer temperature control. It also has other advantages, such as ease of assembly; and inspection can be readily made without disconnecting leads or employing a screw driver. I'm looking forward to seeing you when next in New York." — Maurice H. Role, 81 Walnut Park, Roxbury 19, Mass., writes, "I'm still at the same old stand, doing some electrical contracting and engineering consultation work. I see some of the '19 boys at meetings of the Boston Stein Club and at M.I.T. get-togethers."

The Franklin Institute, Philadelphia, Pa., on March 3, released the story that Kenneth S. M. Davidson, director of the experimental towing tank at Stevens Institute of Technology, 711 Hudson Street, Hoboken, N.J., will receive the Wetherill Medal for his contributions to the improved design of ships through experiments on ship hull models. Most of these experiments were conducted in towing tanks at the Stevens Institute in Hoboken. The Wetherill medal is awarded "for discoveries or inventions in physical science, or for new and important combinations of principles or methods already known."

The following story was included in the above release: "Kenneth S. M. Davidson was born in Buffalo, N.Y., February 9, 1898. After his discharge as a lieutenant in the Army Air Service during World War I, he received his B.S. degree in mechanical engineering from the Massachusetts Institute of Technology. The Crosby Steam Gage and Valve Company employed him as a research engineer and finally as chief engineer from 1923 to 1929. He became associated with the Stevens Institute in 1930 and in 1935 was made director of the 'Experimental Towing Tank.' In that same year, a small towing tank, 100 feet long, was constructed at the Institute and marked the formal beginning of the laboratory. He has published numerous technical papers, including 'Some Experimental Studies of the Sailing Yacht,' for which he was awarded the first Joseph H. Linnard Prize by the Society of Naval Architects and Marine Engineers.

"Davidson's work in hydrodynamics has been instrumental in establishing small towing tanks and models as recognized research instruments, thus opening a much broader field of research than previously considered possible. His interest in ship hulls, however, is not merely experimental and academic; he has sailed as a crew member in many sailing yacht races, the models of which he had frequently tested



in the towing tank. One of these, the 'Ranger,' which successfully defended the 'America Cup' in 1937, dramatically demonstrated the validity of his methods of model testing. During the war the Navy Department and the Office of Scientific Research and Development built two large towing basins, one 313 feet long by 12 feet wide, and the other 75 feet square, at the Stevens Institute for his experimentation with small models. In these experiments he was able to predict quite accurately the performance of larger vessels. His investigation of such little understood phenomena as 'Porpoising' of seaplanes and the behavior of ships in turning or steering have made him internationally famous in the field of model testing. . . .

The Office of Public Relations of the Army Air Forces headquarters in Washington, D.C., released the following story of the presentation of the Distinguished Service Medal to Edmund W. Hill: "Major General Edmund W. Hill, retired, was presented the Distinguished Service Medal by General Carl Spaatz, commanding general of the Army Air Forces, in a recent ceremony at A.A.F. headquarters. The award was made in recognition of General Hill's service as air inspector from December, 1941, to June, 1942. 'General Hill reorganized the office of the air inspector,' the citation read, 'and built the framework upon which all air inspection developed throughout the war years.' Commending the General for his formulation of plans and policies for the growth and development of air inspection, the citation pointed out that he had made a substantial contribution to the success of the air program in the United States and in overseas theaters. General Hill was born in New London, Conn., on April 26, 1896. He attended Technology and was commissioned a second lieutenant of infantry on August 9, 1917. His 24-year career in the Air Forces began on February 25, 1922, when he was transferred from the Infantry to the Air Service. He served at many A.A.F. flying schools, both as student and instructor; and from June, 1939, to August, 1941, he served as commanding officer of Bolling Field, D.C. During World War II, General Hill served for three years with the Air Forces in Europe. After he was relieved as air inspector, he became commanding general of the Eighth Air Force Composite Command in July, 1942, and later was appointed commanding general of American Forces in northern Ireland. In August, 1944, he was designated director of post-hostilities and planning for the United States Strategic Air Forces in Europe and in the following November was named commanding general of A.A.F. Units Installations and Activities in Russia. In September, 1945, the General began his last assignment with the Air Forces as co-ordinator of the Inter-American Defense Board at Washington. Rated a pilot, balloon pilot, combat observer, and balloon observer, General Hill retired on October 31, 1946. He is now living at Belgrade Lakes, Maine."

Your Secretary had an interesting letter from Wirt Kimball of 96 Payson Road, Belmont, Mass. It read as follows: "I had a telephone call Sunday morning and heard a voice say, 'Hello, Wirt, this is K. T. Lee.

Do you remember me?' Do you, Gene? It was K.T. '19, XV. He came out to dinner, and we had a grand visit. He went back to China in 1919 and 'came out' again eight months ago. He has been on the West Coast and more recently in New York City. His trip to Boston was for a few days only, and he is back in New York now. He said he had seen practically no classmates since leaving the Institute, except Jack Meader, who looked him up on a trip of his own to China. I told him I would write you. He said he would like to hear from you and get the New York addresses of some of the '19 boys around there. He told me he was managing the China Chemical Works, Ltd., at 257 Honan Road, Shanghai. His New York address was 630 Fifth Avenue, Room 1755, New York City, telephone Circle 6-7344-5, where he was to be until the end of April and then leave again for the West Coast to sail back. . . . You'll find him most interesting. I did. This is the most news on '19 I've had since graduation. . . ."

Earle E. Richardson of 252 Merrill Street, Rochester 13, N.Y., sends the following message: "I am still with the Eastman Kodak Company (and now a member of its 25-year club) as a physicist in the research laboratory at Kodak Park. I have two sons, who are struggling with courses at the University of Rochester. On my last two trips to New York, attending meetings of the Optical Society, I had hoped to find it convenient to drop in on you. My intentions, however, did not materialize." — Dr. R. S. Hunt of 10 Bonmar Circle, Auburndale 66, Mass., wrote the following note: "I have had quite a few Tech men as patients in the last year but none from the Class of '19. If any of my classmates, is in the vicinity of Newton, I should be glad to stick a needle into his spine if he should want to have his gall bladder, stomach, or other unnecessary organ removed." — Word was received from Howard McClintic, Jr., who says he is back again with the Ferguson and Edmondson Company, Pittsburgh 22, Pa.

Dan Hall, who is now with the Calco Chemical Division of the American Cyanamid Company in Gloucester City, N.J., writes, "Just a line to let you know my whereabouts. I'm sorry we were unable to get together for a luncheon while I was with Singmaster and Breyer in New York. I left there, after completing preliminary work on a Swedish pigment plant, on February 1, to accept a position as development engineer with the above concern. They have an ideal organization and a new plant, which began operations last August, for the manufacture of titanium dioxide. I am now making plans to move my family here from Towson, Md. I shall keep you posted on any changes. Best of luck to you."

The following changes of address were received: Fred P. Baker now resides at 4910 East 6th Avenue, Denver 7, Colo. Louis J. Brown has moved from Washington, his new address being care of H. W. Wheeler, P. O. Box 5, Milford, N.H. Ralston B. Smyth's address is 294 Edgehill Road, Milton 86, Mass. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN G. RICHARDS, *Assistant Secre-*

*tary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

## 1920

Those of you who attended the highly successful reunion last June will recall that there was considerable enthusiasm for another gathering without waiting five years. I want you to know that your desires in this respect were not ignored and that we tried to secure accommodations at the Sheldon House, Pine Orchard, for as many as would have liked to forgather this June, but they were already committed for the few week ends available before the opening of their regular season. Therefore, it seemed necessary to postpone meeting for another year, at least.

Dean Willey has been made vice-president in charge of operating, maintenance, and engineering for the New Haven railroad. He is living in Hamden, Conn. Bob Aborn has been appointed assistant director of the research laboratory of the United States Steel Corporation at Kearny, N.J. During the war he served on the metallurgy committee of the Office of Scientific Research and Development. Word has come, with no details, that Donald B. Sanger died in New York on February 10.

Toots Kinghorn has moved from Kentucky to Cranston, R.I. Jim Leary has left New York for Virginia Beach. Virgil Collins' present address is the Antlers, Congers, N.Y. Hank Erickson has moved from Washington to Bayside, N.Y. Mal Powers has moved from Rochester to Bronxville. Charles Ruby's present address is 38 Westland Avenue, Boston.

Walt Sherbrooke's new address is 49 Margaret Street, Great Kills, Staten Island, N.Y. Walt got into the papers recently by issuing a blast at the Staten Island Ferry System. He says the trouble is that the people who claim to operate this ferry system never have to ride on it. Walt is president of the New York chapter of the American Society of Heating and Ventilating Engineers, and he has his own company in this field. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

Last call for Alumni Day, June 14. . . . The Class will meet at the Hotel Statler at 4:00 p.m. on that afternoon for a showing of movies and photographs taken at last year's reunion by Bob Miller, Charlie O'Donnell, and others. Bring your pictures along for Bob to include in the records. The Boston committee in charge of arrangements includes Josh Crosby, Mel Jenney, Chick Kurth, Lark Randall, and Jack Rule.

Our Class President, Ray St. Laurent, has announced the appointment of Lark Randall as class agent, and congratulations are in order. We hope you will continue to give your full support to Lark, as you have responded so well in the past to your Secretary's appeals in behalf of the Alumni Fund. An announcement of the objectives of the eighth year of the Fund is in your hands for action in supplying the Institute with the added capital resources now needed so urgently. The division of class duties provides for more effective attention to Fund and to secretarial responsibilities.

The measure of success will be your replies to communications from both of us. Have you answered all of them to date?

Lark, who handles advertising from his Boston office and doubles in brass on our secretarial committee, contributes this note: "Wellesley (town, not college) has an M.I.T. club. On April 9, we threw a cocktail and dinner party for members and their wives at the Wellesley Hills Country Club. The Class of 1921 was represented by Al Fraser, who ran the show, and Mich Bawden, Josh Crosby, and yours truly assisted with the Mannattans. Professor 'Marriage' Magoun told us how to bring up our wives and children and vice versa. After looking over the wives, mine observed that perhaps Tech men are not so queer as she had always suspected!"

Another announcement of interest is the appointment of Jack Rule to the Alumni Association war memorial committee. Jack has been serving to co-ordinate with Institute authorities our class gift objective to underwrite a World War II memorial. He also serves as our Institute reporter and, in acknowledging congratulations on his recent elevation to full professorship in Technology's Section of Graphics, which he heads, Jack adds: "I took a cruise in Caribbean waters in November on the aircraft carrier U.S.S. *Philippine Sea* as a guest of the Secretary of the Navy. Palmer Scott was also a guest, and we roomed together. It may also be of interest that the great textbook *Descriptive Geometry*, by Watts and Rule, is now a best seller in the field. The very mention of the subject will be painful to most of us. I note two freshman sons of class members — Bill Loesch's and Herb DeStaebler's boys. Ray has probably told you about our luncheon here at Locke-Ober's on March 27, when he met with members of the local group to discuss class matters and to plan for Alumni Day." According to the M.I.T. Calendar of Events, Jack was interviewed on a radio broadcast over Station WMIT on April 14. In the absence of a video channel, it is not reported how successfully he exhorted listeners to "visualize."

Bill Loesch, Vice-president in charge of production for the Forbes Varnish Company, is to be thanked for contributing a welcome letter on the Cleveland contingent. Bill's letter includes the news that H. Seymour Colton is the director of the Cosma Laboratories Company, specializing in chemical analyses, product testing, consulting, and research; that he is an outstanding badminton player and active in the affairs of the M.I.T. Association of Cleveland; that his son is a sophomore at Technology. Our apologies to Seymour for omitting Gary Colton's name from the list of sons of 1921 at Cambridge during the current school year. For the record, the group totals 11 and includes, besides Gary Colton: Fred Adams, Jr., Paul Anderson, Jr., John Barriger (John W. Barriger, 3rd), Dudley Church (Walter E. Church), William Conant (Lawrence W. Conant), Herbert DeStaebler, Jr., Malcolm Kurth (Henry R. Kurth), Robert Loesch (Willard G. Loesch), William B. McGorum, Jr., Stephen Senzer (Sidney Senzer).

Bill continues: "I am leaving for Boston with my wife and daughter to look over several schools and decide where Norma will matriculate some two years hence. As

you know, Robert is now in the freshman class at Tech. They seem to be feeding it to the boys faster and in bigger gobs than they gave it to us — it may be better that we were around in 1921 instead of in 1950.

"I saw Ollie Bardes of Cincinnati in New York during December while attending the National Association of Manufacturers' meeting at the Waldorf. He is hale and hearty, with an impressive head of gray hair. Miles Zoller, of the Eagle-Picher Lead Company, drops in about once a year, when business brings him to Cleveland. He is the same old Miles and as full of the devil as he ever was.

"Meade Spencer is connected with the architects' office of C. B. Rowley. He has done work for our company over the period of years that I have been here, and I have frequent occasions to talk to him. Roy J. Roy also calls on me quite often, representing the Allen-Bradley Company in this territory. He has supplied us much of the starting equipment used in the plant. Bob Hole is with the Cleveland Construction Company, which is at present completing a job for us. I understand that Bob's time is now completely allotted to the rebuilding of St. John's Cathedral in Cleveland.

"Spencer W. Butler, a roommate of mine in Runkle, lives on the east side of Cleveland, and I see him very seldom. Spence, who heads the S. W. Butler Company, manufacturers representatives, recently visited me, and we discussed old times at some length. Regulars at the Alumni meetings here include Joe Gartland, Bill Clements, and Seymour Colton."

Eliot Underhill, consultant to chemical and process industries and reporter for the Golden Gate area, writes as follows: "Jack Kendall came through here and stopped long enough to say he had been promoted and is headed back to Pasadena next summer if he can find a house to live in, now that his duties will be concentrated on the Coast. Knowing Jack since our grammar school days, I'll lay a bet that Bekins' business will show a sharp rise directly after he takes over and that they will have to start making plans for a bigger and better job for him in the not too distant future. Jack Giles '22, who started with us, is expected here shortly, according to a recent note. As to me, I've been up country on a ranch in the Napa Valley and so sick and miserable I haven't been getting around to see the local bunch. A lot of specialists poked, tested, and x-rayed me, and finally decided against all the more vicious ailments, concluding that I have no more than an extra mean sinus infection. After loss of considerable weight, time, strength, and cash, I'm on the mend."

Leo Mann has reconverted from his wartime activities and is back at 15 Kingston Street, Boston, with his own concern, Leo Mann and Company, manufacturers of an artistic line of *flaconettes*, "Gamecock" specialties for men, and the S.P.C. air purifier preparation. We can attest the popularity of Leo's miniature *flacons*, since our small Eleanor has a collection of several hundred tiny perfume bottles, prominent among which are many designs shown in the Mann catalogue.

Walter Church, Portland, Ore., architect and newsman, answered our query in part as follows: "Speaking of years and

their flight, yes, that is my eldest son, Dudley F. Church '47, who was at Tech before the war, where he affiliated with Phi Delta Theta and lived on Bay State Road. In 1943, he was sent to Aberdeen with the Ordnance group, went to O.C.S., received his commission, and immediately came home and got married. From Camp Bowie, he started with a tank maintenance company for the scheduled invasion of Japan but got no farther than Hawaii. On his discharge in 1946 as a first lieutenant, he returned to Technology, was graduated in February, and is back in Portland, expecting to tie up in industry here." Walt saw about three years of service as a major and lieutenant colonel in the Corps of Engineers on the West Coast and in Alaska, first in the District Engineer's office and later as regional utilities supervisor of the Ninth Service Command.

Dick McKay reports from the nation's capital as follows: "Rollin F. Officer is serving in Washington with the Defense Plant Corporation, subsidiary of the Reconstruction Finance Corporation, which played so important a role in augmenting the plant capacity of the country's wartime industries. After serving as superintendent of construction on the Pentagon Building, Cap functioned in the award and approval of plant design and construction. Since V-J Day, he has been on the other end of the business, arranging settlement of terminated contracts. Cap's address is 1701 20th Street, Northwest, Washington.

"During the war," Dick continues, "I served as management consultant, investigating loans for the directors of the Smaller War Plants Corporation. I am still in Washington with the Defense Plants in the capacity of chief of the management planning division. Donald, the elder of my two sons, is entered for Exeter next fall and is headed for M.I.T. in 1951. Our home here is at 3237 Gunston Road, Parkfairfax, Alexandria, Va."

Both Ray and Class Notes Editor Keith sent us a clipping from the *Monsanto Magazine* for March, carrying a photograph of John J. Healy, Jr., and the news that he has been moved up from director of development of the Merrimac Division to be assistant general manager of the division, with headquarters in Everett, Mass. With Merrimac since our graduation, Jack will continue to carry the responsibility for the current expansion program. He is a member of the admissions committee of the American Institute of Chemical Engineers and former chairman of the Boston section, as well as a director and national councilor of the northeastern section of the American Chemical Society.

Promotions in the armed forces include that of Patrick H. Timothy, Jr., from major to general, and Otto Nimitz, from commander to captain. R. Luff Meredith, a former captain in the Air Forces, has become a civilian and may be addressed in care of General Delivery, Great Falls, Mont.

Mich Bawden writes that he spent most of the winter at the Dexter Folder Company plant in Pearl River, N.Y., and is back in Boston, reopening the Boston office after a leave of absence of five years, during which time he served with the Office of Price Administration. A March third



announcement states that Mich has returned to the graphic arts field to continue his 24-year association with Dexter Folder as manager of the machinery division of Wild and Stevens, Inc., at 5 Purchase Street, Boston 10, Mass. Mich and Mrs. Bawden live in Wellesley Hills. They have two children, Nancy and Garvin, Jr.

"Monon's John W. Barriger: Can he turn a rust streak into a railroad?" is the caption under a front cover portrait on the March 29 issue of *Business Week*, which contains a long biographical sketch and a leading article on Jack's magic in rebuilding the line. Headed "Aspirin for a Hoosier Headache," the article states that "in less than a year, John Barriger has prodded the rickety old Monon into showing new signs of life by pushing extensive plans for modernization and cajoling more freight traffic." It quotes an Indiana folk-song: "Ireland must be heaven 'cause the Monon don't go there," and continues, "2500 Hoosiers paid \$25 a plate to eat the Indiana Society's banquet in Chicago, sing this derogatory ditty about a railroad which is so distinctly a native institution that it is part of their state's folklore, and listen to the principal speaker, John Barriger, president of the road, observe the 100th anniversary of the Monon, which is listed in the financial manuals as the Chicago, Indianapolis & Louisville." With new Diesel-electric locomotives and new passenger and freight cars, John is reported to have produced revenues 50 per cent greater than last year. It is said he commented that the Hoosier Line will make him famous as either a top-notch railroader or a terrible flop. The article says: "Many of the industry's leaders believe that he will win, not lose, on this big bet."

In the following week's issue, *Business Week* carries a series of photographs of yesterday's "High Brass of Armed Forces" who are today's high brass of industry, including Lawrence B. Richardson, former rear admiral and deputy chief of the Bureau of Aeronautics, who is now executive assistant to the president of the Curtiss-Wright Corporation.

New addresses include the following: Abraham M. Aronson, XIV, 313 Stegman Parkway, Jersey City, N.J.; Robert E. Beard, X, Box 253B, Route 2, Independence, Mo.; Grover C. Klein, XIII-A, United States Naval Shipyard, Mare Island, Vallejo, Calif.; Colonel Herman H. Pohl, I, Route 2, Box 89, Leesburg, Va.; Commander Donald W. Randolph, II, Hill Creek Lane, Gates Mills, Ohio; Edward M. Richardson, I, Box 39, Hampton, N.H.; Melvin C. Rose, XIII, 320 St. Paul Place, Baltimore, Md.; John J. Winn, Jr., Honolulu Gas Company, Ltd., 75 South King Street, Honolulu, T.H.

Have you a surplus duplicating outfit you will contribute to the Class for our use in preparing letters, cards, and such? — CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

## 1922

As these notes are being written, the most important event on the class horizon is the reunion at Marblehead, from June 13 to 15. More than 200 men have already said they would be there and, if you are not among them, it will be a calamity. The

final broadcast giving full details has gone out. If by some circumstance, you did not receive yours, or failed to send in the class questionnaire and other data, notify the Secretary at once before it is too late. We had interesting reports from a few men outside the United States, some of whom will be able to get to the reunion; and we will save their news for future issues.

Engineers do not often make the pages of the erudite *New Yorker*, but Bill Mueser is in the March first issue. In it, Bill is interviewed on the preliminary underground investigations that his firm is making for the United Nations of their new East River site in New York. At Marblehead, Bill will probably tell us how far above bedrock the U.N. headquarters will be, when finally settled in Manhattan. — Donald I. Gross was on active duty during the war, engaged in repair and salvage work in the Far East and Australia. He has been active in forming the Asheville, N.C., unit of the newly formed Naval Organized Reserve. He is in the mechanical research department of the American Enka Corporation. — Steve Neiley has been transferred from Cambridge to the Adams plant of the Dewey and Almy Chemical Company as plant manager.

The death of our classmate Charles Tucker in June, 1943, was reported in the class notes. In the *Chemical and Engineering News* of January 20, there was a very interesting article about the Tucker family in chemistry. Tucker's father is a prominent chemist who was graduated from the Institute in 1896, and our classmate not only made his own mark in chemistry but is survived by a brother and a sister, both of whom are well known in chemical studies. *Chemical and Engineering News* occasionally features outstanding families in chemistry, and it was with considerable pride that we read the story concerning our departed classmate.

Carl Grip, X, died on January 13 of a coronary thrombosis. Carl had become a well-known consultant on investments and had recently joined the Boston Stock Exchange. He was active in community affairs, particularly the Boy Scouts. He leaves his widow and three sons, the eldest of whom expects his discharge this summer from the Air Forces; the second boy, now 17, will be graduated from the Newton high school in June. We extend our sympathy to Mrs. Grip and the boys.

This is the last call for the scholarship fund. With the biggest 25-year reunion in history only a few weeks away, our Class should likewise make an outstanding gift to the Institute. Send your check to W. H. Mueser, chairman, Scholarship Fund, 420 Lexington Avenue, New York 17, N.Y. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York 14, N.Y. — WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

## 1923

It has been a great pleasure, from the Secretary's point of view, to peruse and acknowledge the brief vital statistics and information which you are sending in with the class dues. Absence from my office in the period during which most of these have come in has delayed the acknowledgments somewhat, but they are all appreciated.

By and large, the men have interesting jobs; most are married, and most have children. We shall have an excellent attendance at the 25th reunion if the returns indicate correctly. As all members of the Class will probably be interested in how their former associates as undergraduates are faring, now that 25 years have rolled around, I hope to be able to send a list of the men and the data about them to all those who responded; watch for such a mailing.

Meanwhile, I have comments from a number who brought me up to date when they sent in their dues. Robert W. Fox writes from Newark, Del., that he has a grown-up daughter at Sargent. About himself, he says, "Since we left college, I have been engaged almost exclusively in construction work, even helping to build the Jamestown Bridge. I have worked mostly in Arkansas, Oklahoma, Delaware, New Jersey, and Pennsylvania. In 1940, I joined the Army Engineers on war construction; then when caught up there, I transferred to the Reconstruction Finance Corporation. I have been with them now more than three years on war plant construction and for the last year have been trying to untangle the inevitable mess resulting from the war emergency."

Edwin H. Arnold is president and treasurer of Arnold, Hoffman and Company, Inc., of Providence, R.I. They are putting on the market a wetting agent which has promise in connection with certain types of fire-fighting operations. I had followed the development of his trademarked material, "Drench," without identifying him personally with the product until he wrote me. His product got some good promotion in the March issue of *Reader's Digest* by direct mention on page 96 in an article on "Wet Water for Fighting Fires."

Frederick T. Entwistle, now of Waynesboro, Va., is production manager of "Ducilo" S. A. Productora de Rayon, Paseo Colón 285(R44), Buenos Aires, Argentina. He writes as follows: "After 16½ years in Richmond, Va., for Du Pont, I moved to Waynesboro in January, 1946, as manufacturing superintendent at the cellulose acetate plant — still Du Pont. I am now leaving that job and heading for Argentina at about the end of June. 'Ducilo' is associated with Du Pont." — Speaking of Buenos Aires, I had the pleasure of seeing José C. Bertino, who has been on from B. A. in the last month. He is a naval engineer, a commander (retired) from the Argentine navy, and is professor of marine engineering at the University of Buenos Aires.

B. B. Drisko, research engineer of the Stevens-Arnold Company of Boston, has the following to say: "I was at the M.I.T. Servomechanisms Lab for the last year and a half and took some advanced courses, which to the extent that I understood them, brought me up to date. Before that, I was at the Harvard Underwater Sound Lab (of the Office of Scientific Research and Development) during the war, developing underwater loud-speakers. I am now back at my normal peacetime hobby of loudspeakers for pleasure and hope to have my efforts rewarded."

An April bulletin of the M.I.T. Club of Western Pennsylvania records that How-

ard W. Dexter, Jr., is recuperating from a surgical operation at his home and will soon go to Florida for an extended rest. Having a cheerful note from him with his class dues, I take it he is coming along satisfactorily. — Assistant Secretary Russell will leave shortly for a West Coast trip and hopes to see some of the Pacific Coast members of the Class.

I regret to report the death of D. E. Milone, on December 5. Mrs. Milone writes me that he was chief architect for the Bureau of Yards and Docks, Public Works at Parris Island, S.C. In addition to his widow, he leaves three children — a girl, 17, and two boys, 14 and 13. For the latter, Mrs. Milone expresses the hope that they may be able to attend M.I.T., as did their father. — A letter from the Office of the Chief Engineer of the United States Army in the Mediterranean theater mentions that Robert W. Fleming, Jr., a first lieutenant on duty in that headquarters, expects to return to the United States in May for discharge and has applied for admission to the Institute as a freshman in September. Lieutenant Fleming is the son of Captain Robert W. Fleming '23, who was killed in action in January, 1945, while commanding the U.S.S. *New Mexico* at the landings in the Philippines. A Japanese suicide plane flew into the bridge.

Two men have recently received mention by newspaper columnists. Charles B. Driscoll, who writes a syndicated column, on March 6 describes talking of Hawaii with Sydney G. Walton, of the Matson Lines. Driscoll encountered Walton in New York, discussing the Matson Lines' attempts to secure authorization for a scheduled air line to Hawaii from San Francisco. Driscoll devotes a stick of type to describing Walton's Hawaiian sun tan and hazards the guess that he is only about 33 years old — flattering enough to please anybody who has been out of Technology going on 25 years. Arthur A. Riley, in a column in the *Boston Globe* for March 21 on "Personalities Met on a Flight to Latin America," says that leaving the plane at Managua, Nicaragua, was Norman Weiss, a resident of San Francisco, and of interest to Boston readers because his mother lives in Brookline and a brother used to work on the *Boston Herald*.

J. S. Keenan, of the Canadian General Electric Company, Ltd., in Toronto, was elected president of the Canadian Electrical Manufacturers Association at a meeting at Niagara Falls, Ontario, in October. He is head of the supply department of his company, which controls the sales of appliance lines, electronic lines equipment, air-conditioning units, wiring materials, lighting equipment, chemicals, plastics, aircraft, and a variety of industrial equipment. A thumbnail sketch of his career which appeared in the C.E.M.A. house organ for December says that he has six sons and a daughter. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1924

On April 5, while in Boston on company matters, I was able to stay over for an extra day and had a most enjoyable visit with Chick Kane at the Institute. As might be

expected of any good Fund chairman, Chick is never satisfied. Mind you, I don't mean that he is wearing the Worry Bird expression, but he says there is always room in the strongbox for more. I was just about ready to throw my hat up after learning of our present financial status, but a brief explanation from Chick put me straight again. It is not my privilege herein to steal his thunder, for it sounds better coming direct from the "horse's mouth." Suffice it to say, that a meeting of all class officers has been arranged for the morning of Alumni Day, June 14, at the Hotel Statler. Please make every effort possible to be on hand.

Our plans for the rest of the day have not been completed at this writing, but those of you who expect to attend may count on a class cocktail party around 4:00 P.M. on the 14th, even if your Assistant Secretary has to furnish the liquid refreshments out of the well-known "swindle sheet" himself. Class tables will of course be on hand at the big banquet that night, and we are looking for no less than 50 present. We not only have many details about our 25th reunion gift to the Institute but want to make initial plans for the holding of our own class affairs at this time.

On April 19, I spent most of the afternoon in Cleveland with Bill Robinson. After enjoying a lunch at the Canterbury Golf Club, we retired to Bill's house and "beat our gums" for several hours. Bill is very enthusiastic over Alumni Day in June and has particularly requested that the class officers attend the meeting on the morning of June 14. I think I can assure every member of the Class that a good time will be had by all, and that no bromos will be necessary the next day — or only a few for those who get up too much pressure.

Marshall Waterman called me by telephone. He is now in New York with the Electrical Testing Laboratories; I was glad to hear from him. Ed Dunleavy and I had lunch together one day. As some of you perhaps know, Ed is heading up sales for the Habirshaw Wire division of Phelps-Dodge Copper Products Corporation. His address is 40 Wall Street. Bill Correale, the Engineer major, A.U.S., is down at 217 Broadway and called in to see whether 1924 is still alive and open for luncheon dates. We're working up to it, Bill. — FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence, R.I. WILLIAM W. QUARLES, *Assistant Secretary*, Hollow Tree Ridge Road, Darien, Conn.

1925

As a sequel to the announcement in the May notes, I quote the following excerpts from the *Boston Globe* of March 23: "Miss Jane Ludy, daughter of Mrs. George H. Ludy of Storm Lake, Iowa, became the bride last Thursday of Henry C. Trask of Medford, son of Howard Trask of Revere, in historic old King's Chapel of Boston, with Dr. Palfrey Perkins officiating. . . . Following a reception at the Parker House, Mr. and Mrs. Trask left on a wedding trip to Nassau. They will live at 18 Woodsedge Road, Medford, on their return."

The Secretary from time to time receives requests from the Alumni Office for new addresses from class members whose mail

is returned for lack of a forwarding address. The most recent concerns Robert A. Hamburger, an associate member, whose last known residence was 230 Park Place, Brooklyn, N.Y. Will anyone knowing his whereabouts, please communicate with the Secretary or with Miss Irene Walker, Register of Former Students, M.I.T.

The following item appeared in the *Winchester, Mass., Star* of March 14: "Mr. William F. Morton of 38 Arlington St., Winchester, has been named chairman of the Finance Division of the Children's Hospital \$10,000,000 Medical Center campaign. . . . Mr. Morton, a graduate of M.I.T. (Course XIII) and the Harvard School of Business Administration, is treasurer of the Longwood Cricket Club. During World War II, he was attached to the U. S. Strategic Bombing Survey. A public campaign will be conducted in April to raise funds for the proposed Children's Medical Center, first of its kind in the world, for which the Children's Hospital in Boston will be the nucleus."

Notice has been received at the Alumni Office of the death, some time in 1944, of Yook-Yee Wong, an associate member of the Class, and former student in Course IX-B. At the time of his death he was associated with the Canton Trust Company, Tai Ping Road, Canton, China. Further details are not available, except that he is survived by his widow, who notified the Alumni Office of his death. If any Chinese M.I.T. men see these notes, we should appreciate receiving word of any details of Yook-Yee Wong's career and of the cause of his death.

The following quotations from a letter to Tom Price, our Class President, from Frank Turnbull '25, representative on the 25-year anniversary committee, should be of interest to our members: "The efforts of the classes represented on the committee were then discussed . . . 1922 is hoping to establish a scholarship fund. The classes of 1923 and 1924 as well as 1925 are starting with a substantial fund built up mainly by the insurance carried by a comparatively small number of the Class. Ray Bond '22 stated that he expects his class to increase the class fund to \$100,000. He thought that an appeal to those who had not participated in the insurance fund would bring substantial gifts, when it was realized to how much these insurance policies had mounted. . . . It will be interesting to find out next June what 1922 was able to do and what 1923 and 1924 have done to date. We have three years, but it might be well to be thinking and perhaps get the opinion of various classmates from various sections of the country."

Any suggestions on this subject will be appreciated and may be sent to: R. P. Price, Hammermill Paper Company, Erie, Pa.; to Frank Turnbull, 625 Pleasant Street, Milton 86, Mass., or to the Secretary. Additional news of yourselves or of other members of the Class will also be gratefully received. — HOLLIS F. WARE, *General Secretary*, P. O. Box 52, Godfrey, Ill. F. LEROY FOSTER, *Assistant Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

Elmer Warren leaves his position of registrar of Colby College on June 1 to become associate director of personnel at the



home office of the National Life Insurance Company in Montpelier, Vt. He went to Colby in 1928 as an instructor of mathematics and had been there since with the exception of three years during the war when he was chief of personal affairs of the Army Air Forces Personnel Command at Atlantic City, N.J. He was discharged with the rank of major. — You probably noticed the name of Henry Cecil Gunning on the recent ballot of the Alumni Association. He was one of three candidates for the National Nominating Committee from District 10. Gunning, who has both a master's and a doctor's degree from the Institute, is professor of economic geology at the University of British Columbia in Vancouver.

The Billings family have left Wellesley Hills for Brazil, where Ken is with the Gillette Safety Razor Company in Rio de Janeiro. Meanwhile, John Oakley has returned to the States from Brazil, having been transferred by Goodyear from São Paulo to Akron. — Francis Whitaker, a captain in the Navy, is production officer at the Naval Shipyard in Brooklyn. — Arthur Phelps is now living in Valley Stream, Long Island. — Robert Sherwood has left Lake Charles, La., for Beaumont, Texas, where he continues with the Gulf States Utilities Company.

In his recent travels, the Secretary has met various members of the Class. At a dinner at the Duquesne Club in Pittsburgh with a small group of businessmen, Mark Greer was present. At still another meeting in Pittsburgh, the Secretary saw Jim Drain, who is now with the Joy Manufacturing Company in that city. And finally, at a small meeting of Technology Alumni in New York, the Secretary had lunch with George Leness, who is a partner in Merrill Lynch, Pierce, Fenner and Beane. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

### 1927

Plans for the 20th reunion are now in high gear. More than 100 of us will be there, and last minute decisions are expected to bring the attendance to a record high figure. A very large proportion of those attending have indicated their intention of being on hand at East Bay Lodge for the Friday night festivities. Everything points to the reunion being an unforgettable occasion. Be sure you are among those present.

The press has announced some interesting items. Donald L. Ross, who has been an industrial salesman with the Westinghouse Electric Corporation in western Massachusetts for the past 18 years, has been named manager of the company's Springfield office. Ross has been a past director of the Engineering Society of Western Massachusetts and a member of the Massachusetts Society of Professional Engineers. He lives at 80 Birchwood Avenue, Longmeadow. Sidney Waugh, who is a noted American sculptor and designer in glass, has been made a Knight of the Crown of Italy in recognition of his war service with the Fifth Army. He held the rank of captain when he received his discharge in 1945 and had previously been awarded the Croix de Guerre, Silver Star, Bronze Star, and seven battle participation stars. Among the commissions for sculpture which Waugh has

received are those for the National Archives and Federal Reserve buildings in Washington, D.C., and the Buhl Planetarium in Pittsburgh. He has lately completed a monument to General Pulaski for the city of Philadelphia. His works in glass are now in the permanent collection of the Metropolitan Museum of Art in New York. He is a designer for Steuben Glass, Inc., and has written a book entitled *The Art of Glass Making*.

See you at Osterville. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

### 1932

Letters have recently come from two classmates, one being from Don Gilman, urging me to attend our class reunion in June. Don has apparently left Sears Roebuck and is located in Jackson, Miss., with the Mississippi Products, Inc. From their letterhead, it would seem that they produce items manufactured of wood and veneer, in the cabinet and furniture fields. He gives no further details of the family or anything, but perhaps some of the classmates will be in Jackson and have an opportunity to look him up, if we do not see him at the class reunion.

The second letter is from Leo Tyburski. Leo was in the Navy for four years and spent most of his time in the Pacific area. On discharge he was a lieutenant commander. He was married last June to Norma Sangiuliano, who was, and possibly still is, dean of women at Bucknell University. Leo writes that he hasn't heard from many men in our Class, but says that Jack Kearns is married and living in Waterbury, Conn., and working for the Bristol Company, at the main factory. Leo joined the Bristol Company in Detroit, after leaving the Navy in June of 1946, and has since been transferred to Philadelphia, where he expects to stay for a while. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West Seventh Street, Plainfield, N.J. *Assistant Secretaries*: CARROLL L. WILSON, National Research Corporation, 100 Brookline Street, Boston 15, Mass.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

### 1933

We note with regret an item in the Long Island *Daily Press* of the death on February 11 of William R. Allen, 3d, at that time a television radio engineer with the United States Television Manufacturing Company. Allen died of a coronary thrombosis. — In the *Monsanto Magazine* for March is mentioned the appointment of David L. Eynon, Jr., as a division production manager of the organic chemicals division. During the war, Eynon was plant manager of the government-owned Longhorn Ordnance Works at Marshall, Texas, which was operated by the organic chemicals division of Monsanto. — We were happy to hear from Lorraine and Edward Atkinson that they are the proud parents of a daughter, Kathleen, as of March 6. That's all the news until next month. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, 330 Belmont Avenue, Brooklyn 7, N. Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

### 1934

We owe Turner W. Gilman a note of thanks for taking time to write a few words for our gossip column. Major Gilman writes from Yokohama, Japan, where he is with the Signal Section Headquarters of the Eighth Army. Here we quote his letter: "This is one of my few 'reports of status' and is prompted by reading the class notes in the March Review. I've put in several years, off and on, with the Army, and now plan to serve indefinitely. (I was appointed first lieutenant in the Regular Army on July 5, 1946.) I am serving as wire communications officer in the Headquarters of the Eighth Army, which means that I worry about the Japanese telephone system, as well as their telegraph, and the same for allied matters. There is but little engineering involved in dealing with people whose language is unfamiliar, but technical symbols and slatches often come in very handy as means of expressing ideas far too technical for the interpreter. Many 'technical' terms seem to be a sort of slang, a misuse (or a different use) of common terms to express an uncommon idea, and when the interpreters translate them word by word some of the slang expressions become meaningless. Oh me! I've met a few Japanese graduates of M.I.T., but very few Americans. Masaru Kametami '25, II, dropped in the other day. He states that he is secretary of the M.I.T. Association of Japan, more or less inactive due to loss of quarters and members. I hope to make it back to the U.S.A. for the 1949 reunion season; I may even get back to M.I.T. again as an Army student — you never can tell, can you?"

Ralph Gross was married on March 2 to Eleanor Ann Albert, daughter of Mr. and Mrs. M. B. Albert of Brookline. After graduation from Technology, Ralph attended the Tufts College dental school and served with the armed forces during the war.

Our congratulations to Charlie Lucke. On March 5, he became the papa of a boy, Charles Robert, weight nine pounds, six ounces, and reputed to look just like his old man. Charlie is commuting to Bridgeport from Pelham Manor. He is assistant plant manager at American Chain and Cable. Well, this column is short and sweet, but that is the best we can do until some more of you become communicative. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile.

### 1939

Harold Posner was recently named president of the Pallet Sales Company at 122 East 42d Street, New York. Before the war, Harold was associated with this company but resigned to enter government service and war production work. Recently discharged from the Army after five and a half years of service, Monarch Cutler has become engaged to Phyllis Pfeifer of Brookline. Also among the ranks of those now engaged is Simon Roberts, who has likewise picked a girl from Brookline, Ruth Gorfinkle. During the war Simon served three years as an officer in the Army Air Forces.

A very fine family picture of Roger Bross, with his wife and two children, appeared in the Rochester *Times-Union* announcing Rog's return to the Institute as a member of the staff of the Division of Industrial Cooperation. They will live in Medford. Don't forget Alumni Day two weeks away, on June 14. We hope to see you all there. — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Street, Newton Center 59, Mass.

### 1941

We are almost a year behind in answering some of our class correspondence. Our only statement on the situation is "better late than never." Our enclosed apologies are sincere. From Alan Baum we have the following: "I believe you were aware that I joined the Army as a lowly private last November. After basic training at Camp Lee, I was assigned to the Air Corps at Wright Field, where I worked on liquid propellants for jet propulsion. The work was considered so important they made me corporal. After about 10 months in service, I was discharged on October 3, 1946, in order to accept an assistantship in the chemical engineering department at Ohio State University, working part time and studying for my master's degree. It looks like a pretty decent opportunity."

Highlights in the Gavin family for 1946 indicate that Joe has accepted a job with Grumman; the Gavins have settled at 296 East Jericho Turnpike, Huntington Station, Long Island, N.Y.; the pipes have frozen; the refrigerator has come; a baby sitter has been found; a mouse invasion has been defeated. It's disturbing — the variety of news that comes across our desk. Julius Kohn has left General Electric and is working as a mechanical engineer for the United States Time Corporation in Waterbury, Conn. Visitors are invited. From Les Corsa and the Alameda County Hospital in Oakland, Calif., comes the news that follows: "Medical school turned out to be three of the most stimulating and enjoyable years of my life so far. Fortunately, there exists no rivalry between our alma mater and Harvard Medical School, so that during my last two years I was able to use radioactive sodium from the M.I.T. cyclotron in medical research at the Harvard surgical laboratories of the Massachusetts General Hospital with impunity. In fact, if the Army does not call me up next July on my first lieutenant reserve commission, I hope to return to those same labs on a fellowship for one year before continuing training in pediatrics or surgery. I received my M.D. from Harvard on March 23, 1946, and flew out here to start a 15-month internship on April 1. To date, I've enjoyed California and the work, although they have had me going 14 to 18 hours a day, seven days a week. I do wish more of you fellows had gone in for medicine — it's really fascinating and inspiring and needs many more competent men to handle the load. So it goes. How about a Track Club '41 reunion in the next few years?"

An excellent letter is burning a hole in my pocket, but its news about the McGuire family will have to wait until the next issue: time is short, and we must take off for New Orleans. — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos,

Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

### 1942

This is an additional reminder about our fifth reunion. We are having a dinner on Friday, June 13, at 7:30 P.M. in the Campus Room of the Graduate House. We expect to have H. E. Lobdell '17 for a speaker. Lobby is now executive vice-president of the Alumni Association and is sure to provide an interesting evening. The Campus Room is a newly opened room downstairs in the Graduate House. I can vouch for it personally because the Alumni Council is now holding its meetings there.

We had a meeting towards the end of March to lay plans for the affair next month. Jerry Coe drove to Boston from Schenectady to be present. Jerry is a chemical engineer with General Electric. Others present were Bob Howard, Lou Rosenblum, Phil Phaneuf, Brad Darling, and Warren Loud. Bob is finishing his work for his Sc.D. in Metallurgy. Lou is working for Polaroid. Phil is working for United Shoe in Beverly, Mass. He has been married about a year now. Brad works right here at M.I.T. on a research project with the Chemical Engineering Department.

Franklin Hutchinson, VIII, has been awarded a Charles A. Coffin Fellowship by General Electric for graduate study at Yale in physics. Frank went to work in the Radiation Lab directly after graduation. I knew Frank's wife, Edith, when she worked in the Servo Lab two years ago. J. D. Allan is back at M.I.T., continuing graduate studies in Geology, after an interval of four years spent in the Canadian Army (Engineers). Robert Gage, formerly with the Radiation Lab, is now an engineer for station WBEC of Pittsfield, Mass.

Arthur Porter, X, was married on February 15 to Elizabeth Hill of Newton, Mass. Art is a research chemist for the Dewey and Almy Chemical Company in Cambridge. John M. DeBevoise, XVI, was married on April 5 to Betty Wainwright of Great Neck, Long Island. John is now with the Ryan Aeronautical Company in San Diego, Calif. Robert Breckenridge was married on March 7 to Alma Strout of Lynn, Mass. He is now an assistant professor of electrical engineering at M.I.T. We have an announcement of the engagement of Ruth Frelander of Worcester to Irving Kotlier, II. Irving is now working as a research engineer at M.I.T. We hope to see a good many of you on June 13! — WARREN S. LOUD, *Acting Secretary*, Room 2-272, M.I.T., Cambridge 39, Mass.

### 1943

Cause for any paper shortage certainly cannot be ascribed to me this month because I have only a very few notes to write. The engagement of Bob Gunther and Teresa Ann Higgins has been announced. Miss Higgins, whose home is in Great Neck, Long Island, studied at the College of New Rochelle, where she majored in art.

Ray Frankel has taken a post in New York and says that he and three other chaps have a "dandy apartment" near Central Park. He finds the city "fascinating." Andie Batiuchok is now in Kodiak up in the Gulf of Alaska and is looking forward to going farther north before he leaves that part of the world.

It seems that my recent notes about one man in the Class are the cause for violent protest from Walter Wells, who writes that Andie Plonsky is not the only railroad man from the Class and continues thus: "I have been with the maintenance of way department of the Pennsylvania Railroad as assistant on the engineering corps since discharge from the Navy last summer. It's a lot of work, but I am not fettered to an office chair. I'm apt to be out anywhere between Rahway and Princeton Junction, but headquarters are now at New Brunswick, N.J. I will also speak for John Upham, who was working for the Louisville and Nashville Railroad, out of Nashville, Tenn., when last heard from." — CLINTON C. KBMP, *General Secretary*, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.

### 1944 (2-44)

The mailman has been rather good this month, thanks to the increasing interest of the Class. Bob Copsey writes that he is still an assistant production engineer with the Sperry Gyroscope Company and is living at the Phi Gamma Delta Club in New York. He would like to get in touch with some of you classmates in the big city. Lang and Mrs. Flowers were the proud parents of a baby girl, Margaret McKay Flowers, born on January 16, in Thomasville, Ga. He is still with the Douglas Aircraft Corporation in Santa Monica, Calif. Virgil Pettigrew and family have migrated to St. Louis, where he is employed by McDonnell Aircraft. Mal Kispert informs me of his attendance at a symposium on guided missiles at the Institute at which he met Ken Rehler, who is employed by Curtiss-Wright. Also attending the meeting was Phil Whitaker, who is working for the Consolidated Vultee Aircraft Corporation on the West Coast. Max Griffith is working for Douglas Aircraft in Santa Monica. Fred Stearns writes that he was discharged from the Army in January, 1946, and received his degree from Technology in Business Administration last June. He is now employed as an engineer with the Spencer Thermostat Company in Attleboro, Mass. He became engaged to Helen S. Sullivan, of Augusta, Maine, in November, and the wedding will be during this August.

A letter from Bill van Ravenswaay informs me that he is not a rancher, as the General Delivery address he carries would indicate. Instead he is working on jet fuels testing and development for the Phillips Petroleum Company, which has a refinery, gasoline plant, synthetic rubber plant, carbon black plant, and other facilities around Borger, Texas, of which Phillips is a suburb. Plant design and licensee service have kept Bill pushing pretty hard in the various parts of the Southwest. He says that there is a lot of on-the-spot chemical engineering being done there on production of pure chemicals derived from petroleum and that his Technology education is continuing. Bill would like very much to have any of the old gang who comes in the general direction of Amarillo drop in and see him.

Bob Meny writes that he wishes to straighten me out on his "New England" job, which happens to be located in Nitro, W.Va. He is working for the American Viscose Corporation at their staple fiber



plant. Bob drove over to Columbus, Ohio, last March and saw Ken Rehler and family. Ed Walker states that he is still at Tech plugging for an S.M. in June. Harlow White was graduated last term and is now working for Bell Aircraft in Buffalo, N.Y. Henry Bourne is still in and around the halls of the Institute in the capacity of assistant instructor, trying to swing a deal for a master's degree in Electrical Engineering on the side. His main concern is that of keeping up with his social work on his present salary. Your scribe is now working in the commodity research department of the purchasing division of the Ford Motor Company and trying like mad to pick up a little economic and statistical knowledge of business trends.

News has reached us of the coming marriage in June of Malcolm Doyle of Schenectady, N.Y., and Josianne Forster. Dick Maconi and Mary Orrin have announced their engagement. Dick was a lieutenant in the Navy during the war and served 18 months in the southwest Pacific. He was in command of an L.C.I. during the latter part of his service. An article in the magazine of the International Harvester Company tells of Pei Yen Chao, who is planning to return to China. He expects to use his metallurgical education to good advantage in the reconstruction of China. Chao was born in Shanghai, where his father is a banker.

The latest change of address cards from the Institute give the following clues: Aram H. Boyajian is with the General Electric Company in Pittsfield, Mass.; Jim Buchanan, at Green Bay, Wis.; Bill Kennelly, Lockport, N.Y.; Bob Marr, Fairfield, Conn.; K. T. Momose, Cambridge, Mass.; Richard Mullikin, Wilmington, Del.; George Rosenblatt, Cincinnati, Ohio; DeRoss Salisbury, Framingham, Mass.; Ed Sanders, Barberton, Ohio; Joseph Shrier, New Rochelle, N.Y. — WILLIAM B. SCOTT, *General Secretary*, 4829 Walwit Street, Dearborn, Mich. MALCOLM G. KISPERT, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1945 (10-44)

We heard from Steve Gill a few weeks ago. In 1943, he was called to active duty with the Marine Corps and was able to get his degree from Cornell University under its V-12 program. His release from active duty left him with the travel itch unsatisfied. So he signed on for one trip with the Merchant Marine before settling down in Beaver Falls, Pa., where he is a production metallurgist for the Babcock and Wilcox Tube Company. Steve is now a married man of long standing. His wife, the former Anne Hutton, is an alumna of the Bouvé School in Brookline. About a year ago, the family circle was increased by the arrival of Steve, Jr.

Scottie and Nancy Carpenter have established their home in East Chicago, where he is working in the heavy chemical plant process section of the Grasselli Chemicals department of the E. I. du Pont Company. That's a long title for a short lad. His tasks include reviewing all changes and new processes from both the economic and engineering points of view. Still the same party boy, he will use the party rooms of his new house at a moment's notice.

Recently encountered among the toilers in New York City were Jim Healy, Frank McKinley, Greg Walsh, Frank Nolan, and Bob Benedict. Jim is a claims adjuster for the Alcoa Steamship Company. Mac, formerly a sales promotion metallurgist, is a salesman in the New Jersey-New York territory for the Ryerson Steel Corporation. Greg is doing production engineering for the United States Gypsum Company in Staten Island. Frank Nolan is working in the control department of the Jarka Corporation. The Moore McCormack Lines' statistical control group is being assisted by Bob Benedict. — In Bethlehem, Pa., Austin Hunt is training for sales with the Bethlehem Steel Corporation. Dick Jorgenson was recently transferred to the Providence, R.I., sales office of the Merrill Usher Company. Tom Emberton is doing preliminary design for the Ingalls Ship-

building Corporation in Tuscola, Miss. — Many of our classmates are still in school. Our Assistant Secretary, Jim Angell, will receive his master's degree from Technology this June and plans to continue for his doctorate. B. J. Duffy and Wally Ericsson complete their undergraduate thesis in June. B. J. will stay on at the Institute for his master's, and Wally is seriously considering an opportunity to work with the Atomic Energy Commission. Panayottis D. Antoniadis has been studying chemical engineering at the Greek National Polytechnical University and hopes soon to do postgraduate work at the Institute. Ted Hellmuth and Tom Lawson have returned to Lehigh University. Jim Taylor is studying at the American Institute for Foreign Trade in Phoenix, Ariz. The General Electric-Charles Coffin Fellowship at M.I.T. was recently awarded to one of ours, Norman Brown.

During the past few months the social columns have heralded the engagements of Irwin Jennis' to Sylvia Siegel of Cornell University and Maplewood, N.J.; of James Burbank to Laura Lee Wiley of Connecticut College and West Hartford, Conn.; and of John Wyman to Norma Glyn Cooke of Chandler School and Waban, Mass. Last November saw the marriages of Edgar Ahlberg to the former Carolyn Greene Smyth of Mount Holyoke and Milton, Mass.; and of Dick Cross, III, to Vera Wilson of Coronado, Calif. During January, Thomas Struminski married Adele Gusi-orra of Garfield, N.J.

That's all until next fall, lads. Meantime drop me a note about where you've been, what you're doing now, and what you plan for the future. Should you be fortunate enough to be attending Alumni Day this June, stand by to be buttonholed for information. See you then. — JAMES S. MULHOLLAND, JR., *General Secretary*, 1172-77th Street, Brooklyn 28, N. Y. *Assistant Secretaries*: RODERICK L. HARRIS, 1 Winchester Street, Brookline 46, Mass.; JAMES B. ANGELL, M.I.T. Graduate House, Cambridge 39, Mass.

# COME BACK TO TECH

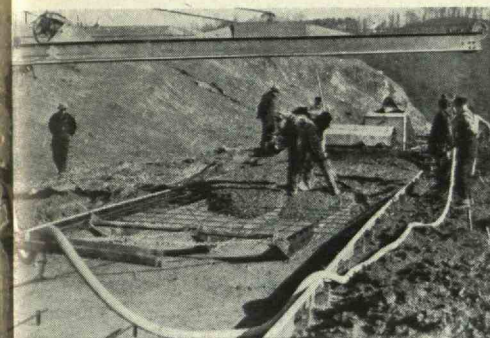
## Alumni Day

### SATURDAY — JUNE 14, 1947



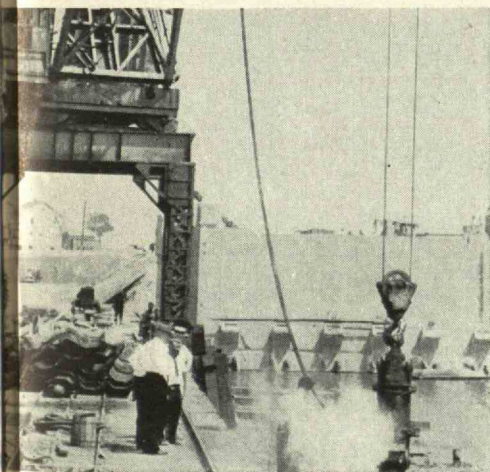
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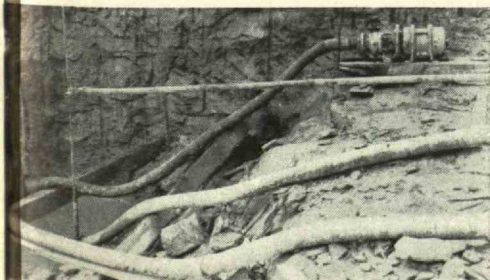


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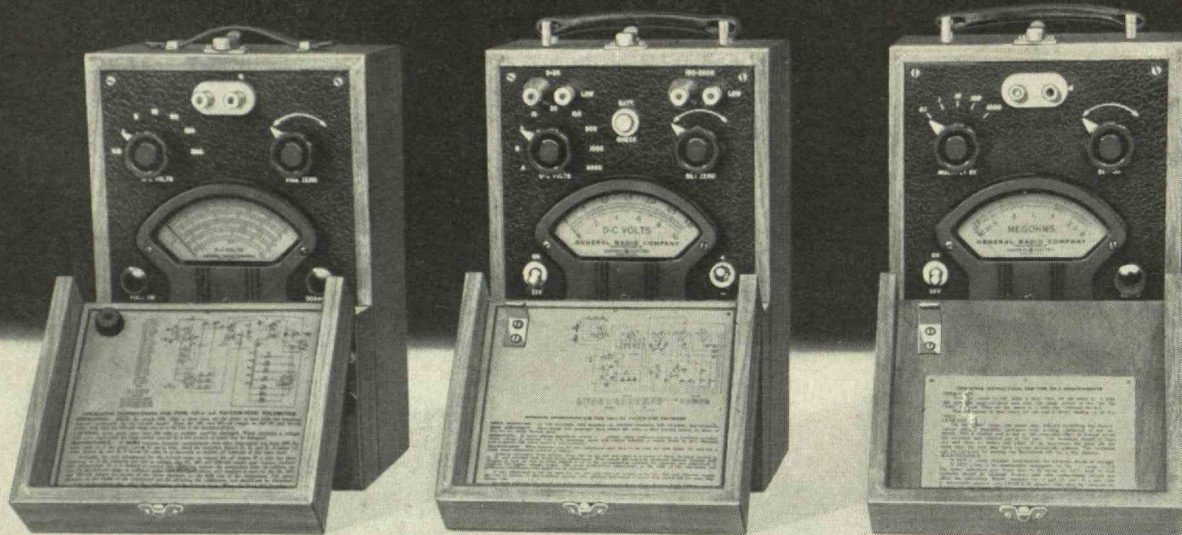
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## TYPE 727-A VACUUM-TUBE VOLTMETER

This general-purpose, battery-operated v-t voltmeter is for use at frequencies up to about 100 megacycles.

**RANGE**—0.05 volt to 300 volts ac, in seven ranges (0.3, 1, 3, 10, 30, 100, 300 volts, full scale)

**ACCURACY**—With sinusoidal voltages applied, the accuracy is  $\pm 3\%$  of full scale on the 0.3-volt range and  $\pm 2\%$  of full scale on all other ranges. Periodic checking of the full-scale sensitivity will give corrections to be made to eliminate effects of aging on the higher voltage ranges.

**WAVEFORM ERROR**—On lowest ranges the instrument approximates a true square-law device. It is calibrated to read the r-m-s value of a sinusoidal voltage. On the higher voltage ranges it is essentially a peak-reading instrument calibrated to read 0.707 of the peak values and on distorted waveforms the percentage deviation from r-m-s values may be as large as the percentage of harmonics present.

**FREQUENCY ERROR**—Less than 1% between 20 cycles and 30 Mc. At 65 Mc the error is about  $\pm 5\%$  and at 100 Mc about  $\pm 10\%$ .

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**PRICE: \$125\***

## TYPE 728-A D-C VACUUM-TUBE VOLTMETER

This battery-operated v-t voltmeter is designed for measuring d-c voltages in low-power circuits where no appreciable power can be taken by the meter.

**RANGE**—0.05 to 3000 volts in seven ranges (3, 10, 30, 100, 300, 1000, 3000 volts, full scale)

**ACCURACY**—Within  $\pm 3\%$  of full scale on all ranges. If the full-scale sensitivity is checked occasionally the effect of aging, on the higher voltage ranges, can be eliminated

**INPUT RESISTANCE**—1000 megohms on the ranges above 100 volts; greater than 5000 megohms on the lower

**TERMINALS**—Two sets of input terminals are provided; one for measurements at the 0 to 30 volts end of the range and the other for higher voltages

**POLARITY**—A reversing switch on the panel permits measurements with either the positive or the negative of the source grounded to the panel of the instrument.

**EFFECT OF A-C**—A superimposed a-c voltage of as high as 200 volts has negligible effect on meter indication

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This battery-operated megohmmeter is particularly useful where portability is required. It is well suited to field measurements of leakage resistance of cables and insulation.

**RANGE**—2000 ohms to 50,000 megohms in five overlapping ranges

**SCALE**—Standard direct-reading ohm-meter calibration is used; center scale values are .1, 1, 10, 100 and 1000 megohms

**ACCURACY**—Within  $\pm 5\%$  of the indicated value between 30,000 ohms and 3 megohms when the central decade of the scale is used; otherwise the error is increased because of the compressed scale

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**VOLTAGE ON UNKNOWN**—Voltage applied to the unknown does not exceed 22½ volts and varies with meter indication

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